

EXHIBIT 6
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SEAL
1 of 2

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UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
SAN FRANCISCO DIVISION

GOOGLE LLC,

Plaintiff

v.

SONOS, INC.,

Defendant.

CASE NO. 3:20-cv-06754-WHA

Related to CASE NO. 3:21-cv-07559-WHA

**OPENING EXPERT REPORT OF DR. DAN SCHONFELD REGARDING CLAIM 1 OF
U.S. PATENT NO. 10,848,885**

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List of Exhibits

Exhibit No.	Description
A	Dan Schonfeld Curriculum Vitae
B	Materials Considered

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List of Prior Art References

Shorthand	Reference
Squeezebox	SLIM Devices' SLiMP3 and Squeezebox Players and corresponding SoftSqueeze and SlimServer Software
Sonos System	The Sonos Digital Music System
Sonos Forums	The Sonos Forums identified in Farrar Exhibits 5-11
Bose	Bose FreeSpace
Millington	Canadian Patent No. 2 533 852
Lambourne	U.S. Patent No. 7,571,014
Nourse	U.S. Patent No. 7,197,148

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1. I have been retained as an expert witness in this action on behalf of Google, LLC (“Google”) to testify as a technical expert concerning the technology at issue in U.S. Patent No. 10,848,885 (“the ’885 patent”). I understand that the parties have agreed to submit expert reports relating to Claim 1 of the ’885 patent. In this Expert Report, I provide opinions on the general subject matter of the ’885 patent, the invalidity of Claim 1 of the ’885 patent, and non-infringing alternatives, among other issues.

2. I am being compensated for my work on this case at my standard consulting rate of \$600/hr. My compensation is not contingent upon the results of my analysis or the substance of my testimony.

3. I expect to be called to provide expert testimony regarding opinions formed based on my analysis of the issues considered in this Report. I may also discuss my own work and publications in the field and knowledge of the state of the art in the relevant time period. I may rely on handbooks, textbooks, technical literature, and the like to demonstrate the state of the art in the relevant time period and the evolution of relevant technologies. I reserve the right to modify or supplement my opinions, as well as the basis for my opinions, based on the nature and content of the documentation, data, proof, and other evidence or testimony that Sonos, Inc. (“Sonos”), or its expert(s) may present, or based on any additional discovery or other information provided to me or found by me in this matter. All of the opinions stated in this Report are based on my current personal knowledge and professional judgment, and if called as a witness during the hearing in this matter, I am prepared to testify competently about them. I reserve the right to use and rely on certain demonstratives to do so. I also reserve the right to amend and/or supplement this Report should additional information or developments that may affect my opinions become available.

4. In reaching the conclusions described herein, I have considered the documents and materials identified and/or cited in this Report, as well as any materials listed in Exhibit B. My

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opinions are also based upon my education, training, research, knowledge, and personal and professional experience.

5. It is my understanding that Sonos may submit an expert report responding to this Report. I reserve the right to rebut any positions taken in that report.

I. SUMMARY OF OPINIONS

6. It is my opinion that Claim 1 of the '885 patent is invalid based on each of the following prior art references and combinations:

- Sonos alone renders Claim 1 obvious;
- Sonos in combination with Sonos Forums, Squeezebox, Millington, and/or Nourse renders Claim 1 obvious;
- Squeezebox alone anticipates and/or renders Claim 1 obvious;
- Squeezebox in combination with Sonos Forums, Squeezebox, Millington, and/or Nourse renders Claim 1 obvious.
- Bose in combination with Sonos Forums, Squeezebox, Millington, and/or Nourse renders Claim 1 obvious.

7. It is my opinion that Claim 1 of the '885 patent is invalid under 35 U.S.C. § 101.

8. It is my opinion that Claim 1 of the '885 patent is invalid under 35 U.S.C. § 112 for lacking adequate written description.

9. It is my opinion that certain licenses would be technically comparable to a license to the '885 patent.

II. QUALIFICATIONS

10. My qualifications for forming the opinions set forth in this Expert Report are summarized here and include my educational background, career history, publications, and other relevant qualifications. My full curriculum vitae is attached as Exhibit A to this Report, and

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includes my detailed employment background, professional experience, and list of publications. A list of cases in which I have testified as an expert at trial or by deposition within the preceding four years is attached hereto as Exhibit B to this Report.

11. I received my B.S. degree in Electrical Engineering and Computer Science from the University of California, Berkeley, California, in 1986 with a concentration on Computer Engineering / Systems Engineering. I received my M.S. degree in Electrical and Computer Engineering from The Johns Hopkins University, Baltimore, Maryland, in 1988 with a concentration on Speech Processing / Biomedical Signal Processing. I received my Ph.D. degree in Electrical and Computer Engineering from The Johns Hopkins University, Baltimore, Maryland, in 1990 with a concentration on Nonlinear Signal Processing / Image Analysis.

12. In August 1990, I joined the Department of Electrical Engineering and Computer Science at the University of Illinois, Chicago, Illinois, where I am a tenured Professor in the Departments of Electrical and Computer Engineering, Computer Science, and Bioengineering. Before I joined the University of Illinois at Chicago, I served as an instructor in the Department of Electrical and Computer Engineering at The Johns Hopkins University, Baltimore, Maryland.

13. At the University of Illinois at Chicago, I have served as the Director of the University-Industry Engineering Research Center (UIERC), formerly the Manufacturing Research Center (MRC). I am also Co-Director of the Multimedia Communications Laboratory (MCL) and a member of the Signal and Image Research Laboratory (SIRL).

14. Over the past few decades, I have also served as a visiting professor in (a) the Advanced Analytics Institute (AAI) at the University of Technology, Sydney, Australia, (b) the Department of Information Engineering and Computer Science (“DISI”) at the University of Trento, Italy, (c) the School of Computer Engineering at the Nanyang Technological University, Singapore, and (d) the Department of Electrical Engineering—Systems at Tel-Aviv University,

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Israel.

15. I have been elected Fellow of the Institute of Electrical and Electronics Engineers (“IEEE”) “for contributions to image and video analysis” as well as Fellow of the International Society for Optics and Photonics (“SPIE”) “for specific achievements in morphological image processing and video analysis.” I have also been elected University Scholar of the University of Illinois. A complete list of my publications, professional activities, and honors that I have received is fully set forth in my curriculum vitae, attached hereto as Exhibit A.

16. I have previously served as Editor-in-Chief and Deputy Editor-in-Chief of the IEEE Transactions on Circuits and Systems for Video Technology. I have also previously served as Area Editor for special issues of the IEEE Signal Processing Magazine. I have served as Associate Editor of the IEEE Transactions on Image Processing (on image and video storage, retrieval and analysis), Associate Editor of the IEEE Transactions on Circuits and Systems for Video Technology (on video analysis), Associate Editor of the IEEE Transactions on Signal Processing (on multidimensional signal processing and multimedia signal processing), and Associate Editor of the IEEE Transactions on Image Processing (on nonlinear filtering). I have also served on the editorial board of the IEEE Signal Processing Magazine, EURASIP Journal of Image and Video Processing, Research Letters in Signal Processing, and Bentham Science Publishers, Ltd.’s “Recent Patents on Computer Science” and “Recent Patents on Electrical Engineering” publications. I have served as guest editor of numerous special issues in various journal publications in the area of multimedia systems.

17. I have previously served on the Conference Board of the IEEE Signal Processing Society. I have previously served as Technical Program Chair of the IEEE International Conference on Acoustics, Speech, and Signal Processing (“ICASSP”) 2018 as well as Program Chair of the IEEE Conference on Visual Communications and Image Processing (“VCIP”) 2015.

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I have also previously served as General Co-Chair of the Workshop on Big Data in 3D Computer Vision 2013 and the IEEE International Conference on Multimedia and Expo (“ICME”) 2012. I have served as Chair of the IEEE Workshop on Video Mining 2008 and the SPIE Conference on Visual Communications and Image Processing 2007. I have also served on the organizing committees of various conferences including the IEEE International Conference on Image Processing 1998, 2012, and 2020, IEEE/SPIE International Conference on Visual Communications and Image Processing (VCIP) 2010, 2017, and IEEE Workshop on Nonlinear Signal and Image Processing (NSIP) 1997. I was an organizer of the Thematic Symposium on Multimedia Search and Retrieval at the IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP) 2009.

18. I have authored and co-authored over 250 technical papers for various journals and conferences. I was author of a book chapter, entitled: “Image and video communication networks,” and later editions entitled: “Video communication networks.” I was co-author (with Carlo Giulietti and Rashid Ansari) of a paper that won the Best Paper Award at the ACM Multimedia Workshop on Advanced Video Streaming Techniques for Peer-to-Peer Networks and Social Networking 2010. I was also co-author (with Junlan Yang) of a paper that won the Best Student Paper Award at the IEEE International Conference on Image Processing 2007. I was also co-author (with Wei Qu) of a paper that won the Best Student Paper Award at the IEEE International Conference on Image Processing 2006. I was also co-author (with Nidhal Bouaynaya) of a paper that won the Best Student Paper Award in Visual Communications and Image Processing 2006. In addition, many of my publications relate to the broad topic of multimedia systems, which includes audio, image, and video processing. My publications in the area of multimedia systems dates back to 1988. A list of my publications within the past ten years is included in Exhibit A.

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19. I was the keynote speaker at the International Conference on Wireless Communications and Signal Processing (WCSP), Yangzhou, China, in 2016, and the International Conference on Intelligent Control and Information Processing (ICICIP) and International Conference on Brain Inspired Cognitive Systems (BICS), Beijing, China, in 2013. Further, I was a plenary speaker at the IEEE/IET International Conference on Audio, Language and Image Processing (ICALIP), Shanghai, China, in 2010, and at the IEEE International Conference on Advanced Video and Signal Based Surveillance (AVSS), Genoa, Italy, in 2009. I was also a plenary speaker at the INPT/ASME International Conference on Communications, Signals, and Systems (ICCSS), Rabat Morocco, in 1995 and 2001.

20. I have served as Representative of Regions 1-6 (North America) on the Chapters Committee of the IEEE Signal Processing Society. I have also served as Chairman of the IEEE Signal Processing Chicago Chapter. I have also served on the IEEE Image, Video, and Multidimensional Signal Processing (IVMSP) Technical Committee, formerly the IEEE Image and Multidimensional Signal Processing (IMDSP) Technical Committee, Visual Signal Processing and Communications (VSPC) Technical Committee, IEEE Signal and Image Processing in Medicine Technical Committee, and the IEEE Multimedia Communications Technical Committee. I currently serve on the American National Standards Institute (ANSI) / Underwriters Laboratory (UL) Standards Technical Panel ("STP") on Multimedia Systems.

21. I have also taught various courses that relate to multimedia systems. For example, since the late 1990s, I have introduced and taught an advanced undergraduate-level / first-year graduate-level course on multimedia systems (originally called multimedia communication networks), which focuses on audio, image, and video processing and communications.

22. I have also served as a consultant in various engagements related to multimedia systems. For example, over the past decade, I have served as an expert witness in several cases

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related to multimedia systems. In 1997, I served as a consultant for Prairiecomm Corp. where, among other tasks, I developed and deployed multimedia systems. Since 2002, I have also served as a member of the American National Standards Institute (ANSI)/ Underwriters Laboratory (UL) Standards Technical Panel (STP) on various standards related to multimedia systems.

23. Additional details of my education and work experience, professional activities, awards and honors, and publications that may be relevant to opinions I have formed are set forth in my curriculum vitae, which is attached as Exhibit A to this Report. Additionally, I have consulted for several companies in the area of signal processing and multimedia systems. A list of cases in which I have testified as an expert at trial or by deposition within the preceding four years is attached hereto as Exhibit B.

III. MATERIALS CONSIDERED

24. In forming the opinions that I express in this Report, I considered the materials referenced in this Report, including the '885 patent and all patents and patent applications to which the '885 patent claims priority, its prosecution history, prior art references and products described in this Report, the documents and things identified in the list attached as Exhibit C to this Report, and my own relevant knowledge and experience.

IV. LEGAL STANDARDS

25. I have been informed by counsel of various legal standards. I set forth my understanding below.

A. Legal Standard for Priority Date

26. I understand that the claimed "priority date" of a patent is the date on which it is filed, or the date on which an earlier-filed patent application is filed if the patentee claims the benefit of priority to that earlier-filed patent application. I understand that a particular claim is entitled to claim the priority date of an earlier-filed application of if the earlier-filed application

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provides written description of the full subject matter of that particular claim. I further understand that the priority date is significant because patents, systems, or documents that are public prior to the priority date may invalidate the claims.

27. I understand that a “critical date” for a patent is one year prior to its filing date. It is my understanding that this date is significant because patents, systems, or documents that are public prior to the critical date, if they disclose each and every limitation of the claims, will invalidate a patent.

A. Prior Art

28. I understand that a patent or other publication must first qualify as prior art before it can be used to invalidate a patent claim.

29. I understand that 35 U.S.C. § 102 (pre-AIA), which I understand applies to U.S. Patent Applications filed prior to March 16, 2013, states as follows:

A person shall be entitled to a patent unless —

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent, or

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States, or

(c) he has abandoned the invention, or

(d) the invention was first patented or caused to be patented, or was the subject of an inventor’s certificate, by the applicant or his legal representatives or assigns in a foreign country prior to the date of the application for patent in this country on an application for patent or inventor’s certificate filed more than twelve months before the filing of the application in the United States, or

(e) the invention was described in — (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United

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States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for the purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language; or

(f) he did not himself invent the subject matter sought to be patented, or

(g) (1) during the course of an interference conducted under section 135 or section 291, another inventor involved therein establishes, to the extent permitted in section 104, that before such person's invention thereof the invention was made by such other inventor and not abandoned, suppressed, or concealed, or (2) before such person's invention thereof, the invention was made in this country by another inventor who had not abandoned, suppressed, or concealed it. In determining priority of invention under this subsection, there shall be considered not only the respective dates of conception and reduction to practice of the invention, but also the reasonable diligence of one who was first to conceive and last to reduce to practice, from a time prior to conception by the other.

B. Legal Standard for Anticipation

30. I understand that, once the claims of a patent have been properly construed, determining anticipation of a patent claim requires a comparison of the properly construed claim language to the prior art on a limitation-by-limitation basis.

31. I understand that a prior art reference “anticipates” an asserted claim, and thus renders the claim invalid, if all elements of the claim are disclosed in that prior art reference, either explicitly or inherently (*i.e.*, necessarily present or implied).

32. I understand that anticipation must be shown by clear and convincing evidence.

C. Legal Standard for Obviousness

33. I understand that even if a patent is not anticipated, it is still invalid if the differences between the claimed subject matter and the prior art are such that the subject matter as a whole would have been obvious at the time the alleged invention was made to a person of ordinary skill

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in the pertinent art.

34. I have been informed and understand that the obviousness analysis requires a comparison of the properly construed claim language to the prior art on a limitation-by-limitation basis.

35. I understand that a person of ordinary skill in the art provides a reference point from which the prior art and claimed invention should be viewed. This reference point prevents one from using his or her own insight or hindsight in deciding whether a claim is obvious.

36. I also understand that an obviousness determination includes the consideration of various factors such as (1) the scope and content of the prior art, (2) the differences between the prior art and the asserted claims, (3) the level of ordinary skill in the pertinent art, and (4) the existence of secondary considerations or objective indicia of obviousness or non-obviousness.

37. I am informed that secondary considerations of non-obviousness may include (1) a long felt but unmet need in the prior art that was satisfied by the alleged invention of the patent; (2) commercial success or lack of commercial success of processes covered by the patent; (3) unexpected results achieved by the alleged invention; (4) praise of the alleged invention by others skilled in the art; (5) taking of licenses under the patent by others; and (6) deliberate copying of the alleged invention. I also understand that there must be a relationship or nexus between any such secondary indicia and the alleged invention. I further understand that near simultaneous and independent invention by others is a secondary consideration supporting an obviousness determination.

38. I understand that a claim can be obvious in light of a single reference, without the need to combine references, if the elements of the claim that are not found explicitly or inherently in the reference are supplied by the common sense of one of skill in the art.

39. I understand that a claim can be obvious in light of a combination of multiple prior

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art references. I understand that the prior art references themselves may provide a suggestion, motivation, or reason to combine, but other times the nexus linking two or more prior art references is standard knowledge and simple common sense.

40. I understand that if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.

41. I also understand that practical and common sense considerations should guide a proper obviousness analysis, because familiar items may have obvious uses beyond their primary purposes. I understand that obviousness analysis therefore takes into account the inferences and creative steps that a person of ordinary skill in the art would employ under the circumstances.

42. I understand that a particular combination may be proven obvious merely by showing that it was obvious to try the combination. For example, when there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp because the result is likely the product not of innovation but of ordinary skill and common sense.

43. I understand that the combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results. When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, obviousness likely bars its patentability.

44. It is further my understanding that a proper obviousness analysis focuses on what was known or obvious to a person of ordinary skill in the art at the time of the alleged invention. Accordingly, I understand that any need or problem known in the field of endeavor at the time of

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alleged invention can provide a reason for combining the elements in the manner claimed.

45. I understand that in analyzing obviousness, one must consider common sense, common wisdom, and common knowledge. I understand that in an obviousness analysis, common sense may supply a missing claim limitation that is not expressly disclosed in a prior art reference. I understand it is appropriate to consider whether a skilled artisan would have used common sense to incorporate a claim limitation into a prior art reference or combination of references.

46. In sum, my understanding is that prior art teachings are properly combined where a person of ordinary skill in the art, having the understanding and knowledge reflected in the prior art and motivated by the general problem facing the inventor, would have been led to make the combination of elements recited in the claims.

D. Legal Standard for Conception and Reduction to Practice

47. I further understand that many of the different categories of prior art refer to the date at which the inventor made the invention. This is called the “date of invention.”

48. I understand that there are two parts to the making of an invention: “conception” and “reduction to practice.”

49. I have been advised that when the inventor first has the complete idea of the invention, this is referred to as “conception” of the invention. Conception is the formation in the mind of the inventor of a definite and permanent idea of the complete and operative invention, as it is thereafter to be applied in practice. A conception of an invention is complete when the inventor has formed the idea of how to make and use every aspect of the claimed invention, and all that is required is that it be made without the need for any further inventive effort.

50. I am also informed that the actual making of the invention is referred to as “reduction to practice.” An invention is said to be “reduced to practice” when it is made and shown to work for its intended purpose. I understand that the filing of a patent application serves as

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constructive reduction to practice of the subject matter described in the application.

51. I understand that “diligence” in the pursuit of a reduction to practice requires an engineer to continuously work toward the creation of a working version of the conceived invention without periods of unexcused inactivity during the period in which diligence is required.

E. Legal Standard for Written Description

52. It is my understanding that a patent must contain a written description of the claimed invention that clearly conveys to those skilled in the art that, as of the filing date sought, that the applicant was in possession of the invention claimed. I understand that a claim is invalid if the patent does not contain this written description. I understand that a patent claim is entitled to the date an earlier-filed patent application only if that earlier-filed application provides sufficient written description for that claim.

53. I understand that invalidity for lack of adequate written description must be shown by clear and convincing evidence.

F. Person of Ordinary Skill in the Art

54. I have been advised that patent claims are reviewed from the point of view of a hypothetical person of ordinary skill in the art (“POSITA”) at the time of the filing of the patent. I understand that, in determining the level of skill in the art, courts consider the type of problems encountered in the art, prior art solutions to those problems, rapidity with which innovations are made, sophistication of the technology, and the educational level of active workers in the field. I understand that not all of these factors will be relevant in a given case.

G. Patent Claims and Claim Construction

55. I understand that a patent may include two types of claims, independent claims and dependent claims. I understand that an independent claim stands alone and includes only the limitations it recites. I understand that a dependent claim can depend from an independent claim

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or another dependent claim, and that a dependent claim includes all the limitations that it recites in addition to all of the limitations recited in the claim from which it depends.

H. Presumption of Validity

56. I understand that a granted patent is presumed to be valid. I understand that the presumption of validity can be overcome if clear and convincing evidence is presented that proves the patent is invalid.

I. Legal Standard for Prior Art

57. I understand that a patent or other publication must first qualify as prior art before it can be found to invalidate a patent claim.

58. I understand that a U.S. or foreign patent qualifies as prior art to an asserted patent if the date of issuance of the patent is prior to the alleged invention of the asserted patent. I further understand that a printed publication, such as an article published in a magazine or trade publication, qualifies as prior art to an asserted patent if the date of publication is prior to the alleged invention of the asserted patent.

59. I understand that a U.S. or foreign patent qualifies as prior art to an asserted patent if the date of issuance of the patent is more than one year before the filing date of the asserted patent. I further understand that a printed publication, such as an article published in a magazine or trade publication, constitutes prior art to an asserted patent if the publication occurs more than one year before the filing date of the asserted patent.

60. I understand that a U.S. patent qualifies as prior art to the asserted patent if the application for that patent was filed in the United States before the alleged invention of the asserted patent.

61. I understand that a system or device qualifies as prior art to the asserted patent if it was in “public use,” meaning it was accessible to the public or was commercially exploited, before

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the alleged invention of the asserted patent.

62. I understand that to qualify as prior art, a reference must contain an enabling disclosure that allows one of ordinary skill to practice the claims without undue experimentation.

63. I understand that documents and materials that qualify as prior art may invalidate a patent claim as anticipated or as obvious.

64. I understand that invalidity must be shown by clear and convincing evidence.

V. THE '885 PATENT

A. Background

65. The '885 patent is titled "Zone Scene Management." The patent was filed on April 12, 2019 and issued on November 24, 2020. The patent identifies Robert A. Lambourne as the sole inventor.

B. Specification

66. The '885 patent "is generally related to the area of consumer electronics and human-computer interaction," and "[i]n particular, the invention is related to method and apparatus for controlling or manipulating a plurality of multimedia players in a multi-zone system." '885 patent at 1:30-34. The '885 patent claims priority to U.S. Provisional Application No. 60/825,407 filed on Sep. 12, 2006, entitled "CONTROLLING AND MANIPULATING GROUPINGS IN A MULTI-ZONE MEDIA SYSTEM."

33. The specification describes conventional multi-zone audio systems available at the time of the invention:

Currently, one of the systems that can meet part of such demand is a conventional multi-zone audio system that usually includes a number of audio players. Each of the audio players has its own amplifier(s) and a set of speakers and typically installed in one place (e.g., a room). In order to play an audio source at one location, the audio source must be provided locally or from a centralized location. When the audio source is provided locally, the multi-zone audio system functions as a collection of many stereo systems, making source sharing difficult. When the audio

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source is provided centrally, the centralized location may include a juke box, many compact discs, an AM or FM radio, tapes, or others. To send an audio source to an audio player demanding such source, a cross-bar type of device is used to prevent the audio source from going to other audio players that may be playing other audio sources.

'885 patent at 1:46-61.

34. The specification discusses issues and benefits of those conventional systems:

In order to achieve playing different audio sources in different audio players, the traditional multi-zone audio system is generally either hard-wired or controlled by a pre-configured and pre-programmed controller. While the pre-programmed configuration may be satisfactory in one situation, it may not be suitable for another situation. For example, a person would like to listen to broadcast news from his/her favorite radio station in a bedroom, a bathroom and a den while preparing to go to work in the morning. The same person may wish to listen in the den and the living room to music from a compact disc in the evening. In order to satisfy such requirements, two groups of audio players must be established. In the morning the audio players in the bedroom, the bathroom and the den need to be grouped for the broadcast news. In the evening, the audio players in the den and the living room are grouped for the music. Over the weekend, the audio players in the den, the living room, and a kitchen are grouped for party music. Because the morning group, the evening group and the weekend group contain the den, it can be difficult for the traditional system to accommodate the requirement of dynamically managing the ad hoc creation and deletion of groups.

Id. at 1:62-2:17.

C. Asserted Claim

35. The '885 patent includes twenty claims, three of which are independent. I understand that Sonos has asserted Claim 1 for the patent showdown. Claim 1 is reproduced below:

1. A first zone player comprising:

a network interface that is configured to communicatively couple the first zone player to at least one data network;

one or more processors;

a non-transitory computer-readable medium; and

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program instructions stored on the non-transitory computer-readable medium that, when executed by the one or more processors, cause the first zone player to perform functions comprising:

while operating in a standalone mode in which the first zone player is configured to play back media individually in a networked media playback system comprising the first zone player and at least two other zone players:

(i) receiving, from a network device over a data network, a first indication that the first zone player has been added to a first zone scene comprising a first predefined grouping of zone players including at least the first zone player and a second zone player that are to be configured for synchronous playback of media when the first zone scene is invoked; and

(ii) receiving, from the network device over the data network, a second indication that the first zone player has been added to a second zone scene comprising a second predefined grouping of zone players including at least the first zone player and a third zone player that are to be configured for synchronous playback of media when the second zone scene is invoked, wherein the second zone player is different than the third zone player;

after receiving the first and second indications, continuing to operate in the standalone mode until a given one of the first and second zone scenes has been selected for invocation;

after the given one of the first and second zone scenes has been selected for invocation, receiving, from the network device over the data network, an instruction to operate in accordance with a given one of the first and second zone scenes respectively comprising a given one of the first and second predefined groupings of zone players; and

based on the instruction, transitioning from operating in the standalone mode to operating in accordance with the given one of the first and second predefined groupings of zone players such that the first zone player is configured to coordinate with at least one other zone player in the given

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one of the first and second predefined groupings of zone players over a data network in order to output media in synchrony with output of media by the at least one other zone player in the given one of the first and second predefined groupings of zone players.

D. Prosecution History

36. I understand that the application underlying the '885 patent was filed on April 12, 2019. On July 5, 2019, the Examiner issued a non-final rejection holding that the claims were obvious over Yamaha DME Designer. **Cite**. On July 5, 2019, the Examiner noted in an Examiner-Initiated Interview Summary that DME did “appear to disclose the predetermined media with a similar degree of specificity” as the claims. **Cite**.

37. The Applicant responded on August 23, 2019 making amendments to the claims and specification, adding for example, a disclosure that “[t]he list of zones in the user interface 520 includes ALL the zones in the system, including the zones that are already grouped.” Likewise, the Applicant amended the claims to (among other things) require a “standalone” mode where zone players are configured to play back media individually, that the standalone speaker “continues to operate in the standalone mode until” one of the “zone scenes has been selected for invocation” and that the standalone mode speaker “transitions” to play back media in synchrony. **Cite**.

38. On January 27, 2020, the Examiner issued another non-final rejection based on double patenting over prior family members of the '885 patent.

39. In the August 19, 2020 notice of allowability, the Examiner stated:

the prior art does not reasonably teach the subject matter of the independent claims. Particularly while DME operates to accomplish playback of selected media in synchrony on a selected set of first, second, etc. playback devices when a scene is invoked upon said set of players, DME does not allow for continuous output of media on a particular playback device and joining of the continuous output by a selected playback device or set thereof in synchrony with media currently playing back upon the particular playback device. That is, the prior art enables the selection

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of a device or group for synchronized playback of media, however the synchronization is the start of the process. Whereas invocation of a scene which adds a playback device or group thereof as claimed causes the added playback device(s) to join with a particular playback device currently playing media and output said media in synchrony with the particular playback device without a pause or interruption of the playing media nor any need for a user to further engage with playback controls of the playing media. The Bose teaches a system which allows for synchronous addition of media players to a playback system while delivering a playing media without interruption. Bose displays static groupings of media players attached as "rooms" and the rooms may be individually activated and individually configured for delivery of a synchronous media and/or grouped into a party mode where all rooms synchronously deliver a common media. As such Bose does not allow dynamic additions and subtractions such as the synchronous addition of a particular third media player and removal of a second media player in substantially real time by the selection of an appropriately configured scene, nor does Bose enable scene-wise storage of such diverse groupings of media players.

Cite.

E. Effective Priority Date

40. The filing date of the '885 patent is April 12, 2019, and the patent claims priority to an earlier application with a priority date of September 11, 2007. I also understand that Sonos has alleged that the '885 patent is entitled to an earlier effective filing date, September 12, 2006. Sonos has also claimed a conception date of December 21, 2005.

67. I discuss Sonos's entitlement to an earlier priority date in Section XI. As described therein, I do not agree that Sonos adequately disclosed the invention or was in possession of the invention at an earlier date. However, the prior art cited in this Report is invalidating even under Sonos's earliest claimed conception date, as described in this Report.

VI. STATE OF THE ART

68. In this section, I provide an overview of the state of the art at the time of Sonos's alleged invention date (December 21, 2005).

69. As described below, speaker system, digital networking, remote control of speaker systems, digital music, speaker groups, and customization of home speaker systems was well

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known.

70. Sonos claims in its complaint that by 2002 “popular audio systems were dependent on a centralized receiver hard-wired to each individual passive speaker throughout a home.” 4:21-cv-07559-KAW Dkt. 51 at 1. Sonos argues that “the Sonos team completely reimagined the in-home music system as a decentralized network of smart playback devices, and it developed a platform that could seamlessly and wirelessly distribute audio room by room or throughout the home at the user’s discretion. Sonos created a ‘choose what to play, where to play it, and how loud’ wireless audio system that could not only perform without lag (e.g. buffering, or network interruptions), but that was also so simple and intuitive that customers would make it part of their daily lives.” *Id.* Sonos claims that the ’885 patent “provides an unconventional solution to the technological problems related to grouping zone players that are described in the ’885 Patent.”

71. Sonos further claims in reference to its parent application issued as U.S. Patent No. 9,344,206 (“the ’206 patent”):

Before the ’206 Patent, a conventional multi-zone audio system might include a number of audio sources, but each audio source had to be connected to its own amplifier and a set of speakers and was typically installed in one place. *Id.* at 1:40-44. This had inherent limitations. ‘In order to play an audio source at one location, the audio source must be provided locally or from a centralized location. When the audio source is provided locally, the multi-zone audio system functions as a collection of many stereo systems, making source sharing difficult. When the audio source is provided centrally, the centralized location may include a juke box, many compact discs, an AM or FM radio, tapes, or others. To send an audio source to an audio player demanding such source, a cross-bar type of device is used to prevent the audio source from going to other audio players that may be playing other audio sources.”

Id. at 1:44-44.

Moreover, as the ’206 Patent recognized, “[i]n order to achieve playing different audio sources in different audio players, the traditional multi-zone audio system is generally either hard-wired or controlled by a pre-configured and pre-programmed controller.” ’206 Patent at 1:56-59. Such a system created problems. “While the pre-programmed configuration may be satisfactory in one situation, it may not be suitable for another situation. For example, a person would like to listen to

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broadcast news from his/her favorite radio station in a bedroom, a bathroom and a den while preparing to go to work in the morning. The same person may wish to listen in the den and the living room to music from a compact disc in the evening. In order to satisfy such requirements, two groups of audio players must be established. In the morning, the audio players in the bedroom, the bathroom and the den need to be grouped for the broadcast news. In the evening, the audio players in the den and the living room are grouped for the music. Over the weekend, the audio players in the den, the living room, and a kitchen are grouped for party music. Because the morning group, the evening group and the weekend group contain the den, it can be difficult for the traditional system to accommodate the requirement of dynamically managing the ad hoc creation and deletion of groups.”

Id. at 1:59-2:10.

Thus, the ’206 Patent recognized “a need for dynamic control of the audio players as a group” and a system in which “the audio players may be readily grouped.” ’206 Patent at 2:11-13. The invention of the ’206 Patent would, thus, overcome the problems “in a traditional multi-zone audio system [where] the audio players have to be adjusted one at a time, resulting in an inconvenient and non-homogenous audio environment.”

Id. at 2:13-16.

The ’206 Patent provided an unconventional solution to this technological problem. “In general, the present invention pertains to controlling a plurality of multimedia players, or simply players, in groups.” ’206 Patent at 2:28-29. One specific aspect of the grouping technology that is taught by the ’206 Patent involves a controller with a user interface that permits a user to configure and save a “zone scene,” which may comprise a “predefined” grouping of zone players that can later be “activated” (or “invoked”) in order to group the zone players in the “zone scene” together for synchronous playback. *Id.* at 2:30-53, 2:60-3:4, 8:19-10:45. The ’206 Patent explains that this “zone scene” technology for grouping zone players together for synchronous playback provides improvements over the existing technology for grouping zone players together for synchronous playback, which involved defining the group membership at the time that the group was to be invoked – particularly in situations where a larger number of zone players are to be grouped together for synchronous playback. *Id.* at 8:19-55. For instance, the benefits highlighted by the ’206 Patent include (i) allowing a group of zone players to be “predefined” as part of a “zone scene” so that the group’s membership need not be defined at the time that the group is to be invoked, (ii) allowing a predefined group to be invoked without requiring the zone players in the group to be separated from other groups beforehand, and (iii) allowing zone players to exist as part of multiple different predefined groups that can be invoked in order to dynamically group the zone players for synchronous playback.

Id. at 8:19-10:45.

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72. Sonos's description above is flawed. Sonos's claim that "popular audio systems were dependent on a centralized receiver hard-wired to each individual passive speaker throughout a home" ignores that the claims of the '885 patent are not limited to wireless speaker systems nor do they exclude passive speakers. Sonos's claim that it "completely reimagined the in-home music system as a decentralized network of smart playback devices" ignores that Sonos claimed neither "smart speakers" nor "a decentralized network." Sonos's claim that it invented a speaker system that would "perform without lag" also has no relationship to the claim language. Sonos's admission that a "conventional multi-zone audio system might include a number of audio sources," is correct, but its statement that in such a conventional multi-zone audio system "each audio source had to be connected to its own amplifier and a set of speakers and was typically installed in one place" is inaccurate. As described below, speakers may either have a built-in amplifier or use an external amplifier and the statement that each speaker was "typically installed in one place" is inconsistent with the admission that multi-zone audio systems were conventional at the time. Indeed, the prior art described below shows that speakers could be installed in multiple rooms, multiple zones, or within the same. Sonos is correct that conventional speaker systems could have an "audio source provided" either "locally" or "centrally." Further, while Sonos admits that a conventional system may utilize speaker groups in the morning, evening, and weekend that use a speaker in a hypothetical den, Sonos claims that "it can be difficult for the traditional system to accommodate the requirement of dynamically managing the ad hoc creation and deletion of groups." Not so. Indeed, prior art computerized systems such as Sonos's own system and the Logitech system allowed for "ad hoc" and "dynamic" group management through a digital interface. Sonos's claim that there was "a need for dynamic control of the audio players as a group" and a system in which "the audio players may be readily grouped" contradicts its own admission that digital music systems and "conventional" multi-zone audio systems already existed.

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Sonos's claim that a problem with "a traditional multi-zone audio system" is that "audio players have to be adjusted one at a time, resulting in an inconvenient and non-homogenous audio environment" misses the fact that Sonos has already admitted that multi-zone audio systems were conventional and that the claims say nothing about adjusting speakers one at a time or not, unless Sonos uses this to refer to grouping, which as it already admitted, was well known at the time of the invention.

73. The Prior Art discussed below in Section VIII (Overview of the Prior Art) and Section X (Invalidity Based on Anticipation and Obviousness) also constitutes evidence of the state of the art, and I fully incorporate those references herein.

VII. PERSON OF ORDINARY SKILL IN THE ART

74. I understand that the hypothetical person of ordinary skill in the art is presumed to have knowledge of all references that are sufficiently related to one another and to the pertinent art, and to have knowledge of all arts reasonably pertinent to the particular problem that the alleged invention addresses.

75. In my opinion, a person of ordinary skill in the art of the '885 patent would have at least (a) a bachelor's degree in computer science, computer engineering, electrical engineering, or an equivalent thereof, and (b) at least 2-4 years of professional experience in the field of multimedia playback systems, such as consumer audio systems, or an equivalent level of skill, knowledge, and experience. Moreover, additional education could substitute for work experience and significant work experience could substitute for formal education.

76. I meet the criteria and consider myself a person with at least ordinary skill in the art pertaining to the '885 patent. I would have been such a person at the time of alleged invention of the '885 patent.

77. I note that my opinions would not change if a slightly higher or lower degree of

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expertise were applied.

VIII. OVERVIEW OF THE PRIOR ART

A. Sonos's Own Systems

1. The Sonos System is Prior Art

78. I understand that the Sonos System is prior art under 35 U.S.C. 102(b) because it was in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States (*i.e.*, more than one year before September 12, 2006). I understand that the Sonos System is also prior art under 35 U.S.C. 102(a) because it was known or used by others in this country and described in a printed publication in this or a foreign country before the invention thereof by the applicant for patent (*i.e.*, before Sonos's alleged invention date of December 21, 2005). I disagree with Sonos's alleged invention date as discussed in Section XI, but assuming that this invention date applies, the Sonos System remains prior art under 35 U.S.C. 102(a).

79. For example, Sonos's employees have testified that the Sonos System was available at least by 2004. Lambourne Dep. Tr. at 90:10-98:8. Sonos's webpage advertised and offered the Sonos System for sale no later than March 2005. *E.g.*, GOOG-SONOS-NDCA-00108095 ("IA") at 118-192.¹

¹ References to IA refer to an Internet Archive declaration produced in this case at the Bates numbers identified above.

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IA at 119.

80. Reviews of the Sonos System were issued no later than May 2005. IA at 193-195; 209-216; 237-239; 249-259 (October 2005). Sonos authored user manuals for the Sonos System no later than April 2004. Lambourne Dep. Ex. 1077 (April 2004); IA at 357-492 (January 2006). Mr. Lambourne, who worked on the Sonos System, testified that he was not aware of dates on their user manuals being inaccurate. Lambourne Dep. Tr. at 152:13-164:25. Sonos also publicly offered specifications sheets for its Sonos System no later than May 2005. IA at 493-494.

81. Sonos's press releases also show that Sonos sold and offered for sale the Sonos System no later than January 27, 2005.

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AWARD-WINNING SONOS™ DIGITAL MUSIC SYSTEM BEGINS SHIPPING TO CONSUMERS

SANTA BARBARA, Calif. — January 27, 2005 — Sonos, Inc. today announced that the award-winning Sonos™ Digital Music System has begun shipping to pre-order customers in the United States. The Sonos Digital Music System is the first and only multi-zone digital music system with a wireless, full-color LCD screen controller that lets consumers play all their digital music, all over their home, and control it all from the palm of their hand. The company expects that all pre-orders will be filled within 10 days.

The Sonos Digital Music System is now available for purchase online at www.sonos.com and will be offered at consumer electronic retailers across the nation over the next several weeks. Sonos now offers an introductory bundle of two Sonos™ ZonePlayers and a Sonos™ Controller for \$1,199.00. Since the system is scalable up to 32 zones, additional ZonePlayers retail for \$499.00 and additional Controllers retail for \$399.00.

IA at 166.

REALNETWORKS and SONOS TEAM TO OFFER FIRST MULTI-ROOM DIGITAL MUSIC SERVICE

Rhapsody Will Be Available Via Sonos™ Digital Music System in March

See the Demo at CES; Sonos & RealNetworks Booths in LVCC South Hall

SEATTLE & SANTA BARBARA, Calif. — January 05, 2005 — Sonos, Inc., the developer of the award-winning Sonos™ Digital Music System, and RealNetworks® (Nasdaq: RNWK), the leading creator of digital media services and software, today announced a partnership to integrate and promote the leading Rhapsody® online music service with the Sonos Digital Music System. Today's news marks the first time that a legal digital music service has been made available for use in multi-room environments. With Sonos and Rhapsody, consumers will now have the flexibility to enjoy multiple Rhapsody streams in different areas of the home, and for the first time, control it all from the palm of their hand.

The Sonos Digital Music System is the first and only multi-zone digital music system with a wireless, full-color LCD screen controller that lets consumers play all their digital music, all over their home, and control it all from the palm of their hand. Sonos customers with a Rhapsody subscription will now have easy access to their personalized Rhapsody library using their Sonos™ Controller and will be able to play the Rhapsody music over multiple Sonos™ ZonePlayers throughout the home perfectly synchronized. Subscribers will be able to browse and select their favorite music, playlists and Internet radio stations and will be able to view the track information and album art.

IA at 168.

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SONOS ANNOUNCES RETAIL DISTRIBUTION OF THE AWARD-WINNING SONOS™ DIGITAL MUSIC SYSTEM

Crutchfield, Magnolia Audio Video and Ovation Audio Video Among First Retailers to Offer Consumers Total Control of Their Digital Music Anywhere in the Home

SANTA BARBARA, Calif. — March 07, 2005 — Sonos, Inc. today announced that the company has signed up more than 70 retailers and custom integrators to sell the award-winning Sonos™ Digital Music System. Retailers including Crutchfield, Magnolia Audio Video, Ovation Audio Video and 6th Avenue Electronics now offer their customers the Sonos Introductory Bundle of two Sonos™ ZonePlayers and one Sonos™ Controller for \$1,199.

The Sonos Digital Music System is also available through the custom integrator channel, including New Jersey's TheaterMax, cyberManor in the San Francisco Bay Area and Chicago's Metronet Safe & Sound and can be seen in their showrooms.

"Digital music lovers can now go out and touch our product at the retail level. This is very important during the early sales cycle for a product that is developing a new category," said Tom Cullen, Vice President of Sales and Marketing, Sonos, Inc. "Once the consumer receives a demonstration of the product in-person, we believe they will see that their dream of whole-home digital music is now a reality."

The Sonos Digital Music System is the first and only multi-zone digital music system with a wireless, full-color LCD screen controller that lets consumers play all their digital music, all over their home, and control it all from the palm of their hand.

To learn more about the Sonos Digital Music System or to find a dealer, please visit www.sonos.com.

IA at 164; IA at 166.

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Press Releases

March, 2005

- [SONOS INTRODUCES THE SONOS™ LOUDSPEAKER SP100](#)
- [SONOS ANNOUNCES RETAIL DISTRIBUTION OF THE AWARD-WINNING SONOS™ DIGITAL MUSIC SYSTEM](#)

January, 2005

- [AWARD-WINNING SONOS™ DIGITAL MUSIC SYSTEM BEGINS SHIPPING TO CONSUMERS](#)
- [REALNETWORKS and SONOS TEAM TO OFFER FIRST MULTI-ROOM DIGITAL MUSIC SERVICE](#)
- [SONOS DIGITAL MUSIC SYSTEM HONORED WITH 2005 IF PRODUCT DESIGN AWARD](#)

November, 2004

- [SONOS™ DIGITAL MUSIC SYSTEM HONORED AS "BEST OF AUDIO" IN THE 2005 CES INNOVATIONS DESIGN & ENGINEERING AWARDS](#)
- [SONOS™ DIGITAL MUSIC SYSTEM HONORED BY POPULAR SCIENCE MAGAZINE](#)

June, 2004

- [WHOLE HOME DIGITAL MUSIC ARRIVES WITH THE SONOS™ DIGITAL MUSIC SYSTEM](#)

IA at 171.

SONOS INTRODUCES THE SONOS™ LOUDSPEAKER SP100

SANTA BARBARA, Calif. — March 21, 2005 — Sonos, Inc. today announced the immediate availability of a compact, high-performance bookshelf speaker. The company is now offering the Sonos™ Loudspeaker SP100 as an optional purchase with the award-winning Sonos™ Digital Music System. The sleek and contemporary speaker is engineered to deliver great sound in a compact form factor, all while providing digital music lovers with a complete home solution.

The style of the Sonos Loudspeaker SP100 complements the cosmetic design of the Sonos Digital Music System. The speaker features a matte dark-gray cabinet finish with a removable charcoal colored grille. The SP100 includes high-quality drivers, a 1" magnetically shielded Teteron dome tweeter, and a silver 5.5" magnetically shielded polypropylene copolymer core woofer. The speakers are designed with metal spring-binding posts and come with a pair of 14-gauge speaker wires.

IA at 173.

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SONOS ANNOUNCES RETAIL DISTRIBUTION OF THE AWARD-WINNING SONOS™ DIGITAL MUSIC SYSTEM

Crutchfield, Magnolia Audio Video and Ovation Audio Video Among First Retailers to Offer Consumers Total Control of Their Digital Music Anywhere in the Home

SANTA BARBARA, Calif. — March 07, 2005 — Sonos, Inc. today announced that the company has signed up more than 70 retailers and custom integrators to sell the award-winning Sonos™ Digital Music System. Retailers including Crutchfield, Magnolia Audio Video, Ovation Audio Video and 6th Avenue Electronics now offer their customers the Sonos Introductory Bundle of two Sonos™ ZonePlayers and one Sonos™ Controller for \$1,199.

The Sonos Digital Music System is also available through the custom integrator channel, including New Jersey's TheaterMax, cyberManor in the San Francisco Bay Area and Chicago's Metronet Safe & Sound and can be seen in their showrooms.

IA at 175.

AWARD-WINNING SONOS™ DIGITAL MUSIC SYSTEM BEGINS SHIPPING TO CONSUMERS

SANTA BARBARA, Calif. — January 27, 2005 — Sonos, Inc. today announced that the award-winning Sonos™ Digital Music System has begun shipping to pre-order customers in the United States. The Sonos Digital Music System is the first and only multi-zone digital music system with a wireless, full-color LCD screen controller that lets consumers play all their digital music, all over their home, and control it all from the palm of their hand. The company expects that all pre-orders will be filled within 10 days.

The Sonos Digital Music System is now available for purchase online at www.sonos.com and will be offered at consumer electronic retailers across the nation over the next several weeks. Sonos now offers an introductory bundle of two Sonos™ ZonePlayers and a Sonos™ Controller for \$1,199.00. Since the system is scalable up to 32 zones, additional ZonePlayers retail for \$499.00 and additional Controllers retail for \$399.00.

IA at 177.

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WHOLE HOME DIGITAL MUSIC ARRIVES WITH THE SONOS™ DIGITAL MUSIC SYSTEM

Multi-Zone Digital Music System Renders the Traditional Black Stereo Rack Obsolete

SANTA BARBARA, Calif. — June 07, 2004 — Digital music fans can now listen to rock in the garden, punk in the playroom and fusion in the bedroom, with the launch of the **Sonos™ Digital Music System**. The Sonos offering is the first and only multi-zone digital music system with a wireless, full-color LCD screen controller that lets consumers play all their digital music, all over their home, while controlling it all from the palm of their hand.

The Sonos Digital Music System is comprised of two stylish components: the **Sonos™ ZonePlayer**, a networked audio player that distributes, plays and amplifies music in any "zone" in the home, and the **Sonos™ Controller**, a wireless handheld device with a full-color screen which allows the user to access, customize and control the music anywhere- from the bedroom to the backyard.

IA at 188; *see also* IA at 194; IA at 197; IA at 202; IA at 238; IA at 249.

2. The Sonos System Overview

82. The Sonos System allows for sending music to various zones and linking zones together so that more than one ZonePlayer can play the same source. This can be used for party modes or for when a user wants to jump back and forth between two particular zones, and makes the system a “whole house music management solution.”

Sending Music to Various Zones

Each Zone can either stream music from your music library, any of the ZonePlayer line inputs, or the Internet (via free online radio stations supported by Sonos or user-added MP3-streaming broadcasts). Did you catch the part about being able to select Line-inputs? Don't ignore that one. With Sonos, you can send any two-channel source into a ZonePlayer and then stream that source to *any* or *all* of your other zones. I would suggest hooking up the CD or DVD player's analogue outputs to the nearest ZonePlayer just because it allows you to quickly send a brand new disc (or perhaps one you haven't yet encoded) to another room with the push of a button.

The process for doing any of these things is so straightforward it is hardly worth noting. Use the Controller to select a zone, select your source and hit the 'Enter' button at the center of the scroll wheel.

Linking Zones

Not only can you add and assign new ZonePlayers to your Sonos Digital Music System network, you can group or 'Link' zones so that more than one ZonePlayer can play the same source. This is perfect for party modes or for when you might be jumping back and forth between two particular zones. This feature really takes this system up a notch as it truly makes it a whole house music *management* solution.



IA at 255.

83. The Sonos System allows a user to direct different streams of music to different

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rooms, link rooms together so that they all play the same music, and adjust volume either independently or as a group through the Sonos software.

You can perform some pretty sophisticated stunts using that remote, like directing different streams of music to different rooms, linking several rooms so that they all play the same music, adjusting their volume either independently or as a group, and queuing up what music you want to hear next. The Sonos software manages to make all of this simple and visual.

IA at 271.

84. The Sonos controller software allows a user to unmute their “House” and mute their House or a Group, as well as modify the equalizer, play next, “play now,” play previous, add to queue, play the “Random” and “Repeat.”

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Windows Shortcut Keys

FUNCTION	KEY SEQUENCE
Help	F1
Album Art	F4
Equalizer	F5
Unmute House	F6
Mute House	F7
Mute Group	F8
Volume Down	F9
Volume Up	F10
Next	CTRL + F
Play/Pause	CTRL + P
Play Now	CTRL + N
Previous	CTRL + B
Add to Queue	CTRL + Q
Random	CTRL + H
Repeat	CTRL + T

IA at 368; Lambourne Dep. Ex. 1077 at 25, 26, 60.

85. Sonos describes the setup of the Sonos System as follows:

1-2-3 Setup

It takes just 3 steps to get your Sonos Digital Music System up and running:

- ① Connect speakers to your ZonePlayer
- ② Connect the first Sonos ZonePlayer (with Ethernet cable supplied) to your home network
- ③ Install the computer software (or use a Controller) to configure your music system

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IA at 369; Lambourne Dep. Ex. 1077 at 11.

86. A Sonos user could, as setup item #1 suggests, connect their speakers to the ZonePlayer as follows:

1 Step 1: Set Up Speakers/Apply Power

Your speaker's power rating should be at least 75W for 8 Ohm speakers, and at least 150W for 4 Ohm speakers. **Do not connect speakers rated at less than 4 Ohms.**

Note: Connect the **red (+)** and **black (-)** terminals from each speaker to the corresponding terminals on the ZonePlayer. Mismatching of polarities will result in weak central sound, and a distorted sense of sound direction.

1. When making connections, ensure that none of the strands of your speaker wire come in contact with an adjoining terminal on the rear panel.



2. Use your thumb or finger to firmly push the spring-loaded speaker connector post inward to reveal the connection hole.
3. Insert the stripped end of the speaker wire into the hole, then release. The stripped portion should be caught firmly in the connector post.
4. Repeat to install the other speaker wires.
5. Attach the power cord to the ZonePlayer and plug into a wall outlet.

The **Mute** button indicator and the **ZonePlayer Status** indicator will begin to flash. (If this ZonePlayer was previously connected to another Sonos Digital Music System, the ZonePlayer Status indicator may light solid white instead.)

Lambourne Dep. Ex. 1077 at 14.

87. The ZonePlayer must then be hardwired into an Ethernet router:

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2 Step 2: Connect First ZonePlayer

1. Connect the Ethernet cable from an open port on your router to any of the four (4) Ethernet switch connectors on the back of your ZonePlayer (see **A** in the diagram below).
 - If your modem is currently plugged into the only network interface connector on your computer, you should install a standard router before continuing. If you don't have a router, go to <http://faq.sonos.com/norouter> for instructions.

Or,

- If you have structured (built-in) wiring that connects to a router located elsewhere in your home, you can connect the Ethernet cable from a live wall plate into one of the four Ethernet switch connectors on the back of your ZonePlayer (see **B** in the diagram below).

IA at 370, 371; Lambourne Dep. Ex. 1077 at 15.

88. Next, the user must install the software to operate the Sonos System.

3 Step 3: Install software

If your operating system is Macintosh® OS X (version 10.3 or later), Windows® 2000 or Windows® XP, insert the Sonos System Setup CD-ROM and follow the on-screen instructions to install the software which will guide you through the process of configuring your music system, and setting up access to your music files.

- If the Desktop Controller software for Windows does not start automatically, run "d:/setup.exe" replacing "d" with your CD-ROM drive's letter as necessary.
- If you have a different operating system, see "System Setup Using Controller".
- If you have only a NAS device without a router, see "Setup Using Only a NAS Device (no router)".

IA at 372; Lambourne Dep. Ex. 1077 at 16.

89. The Sonos System provides for both wireless and wired connections.

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Adding a ZonePlayer

If your house has structured (built-in) wiring, you can make a 'wired' connection to an additional ZonePlayer. Otherwise, make a wireless connection.

Caution: Do not place any items on top of your ZonePlayer. This may impede the air flow and cause your ZonePlayer to overheat.

When and why should I use a wireless connection?

The Sonos Digital Music system uses a built-in wireless connection to communicate between ZonePlayers. You can place ZonePlayers anywhere without physically connecting them to your computer network, as long as they are within transmitting range (up to 100 ft. depending upon your home's layout). This means that you do not need to go to the effort of installing cables, and you can relocate your ZonePlayer(s) easily.

IA at 373; Lambourne Dep. Ex. 1077 at 17, 18.

90. A user can rename the zones using the desktop controller software or the Sonos controller:

Renaming a ZonePlayer

If you name a ZonePlayer incorrectly, or if you move your ZonePlayer to another room, you can rename it to suit your preference.

To rename using Desktop Controller software

1. From the **Zones** menu, click **Set Up Zones**.

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2. Select the ZonePlayer you wish to change, and click **Settings**.
3. From the **Zone Name** tab, select a name from the list, or type a new name for this ZonePlayer in the **Zone Name** field, and then click **OK**.

To rename using Sonos Controller

1. From the **Music** menu, select **System Settings>ZonePlayer Settings** and press **OK**.
2. Use the scroll wheel to highlight the zone you wish to change, and press **OK**.
3. Select **ZonePlayer Name**, and press **OK**.
4. Choose one of the following options:
 - Use the scroll wheel to select a new name from the list, and then press **OK**.

Or,

- Type a different name by selecting **Enter New**.
 - Use the scroll wheel to select each letter, pressing **OK** after each entry.
 - Press **Accept** to accept the new name, or press **Cancel** to leave the screen without making a change.

IA at 374-375; Lambourne Dep. Ex. 1077 at 24, 50, 51.

91. The Sonos System can also hide the Zone and unname it to use the ZP just to extend the wireless range of the system:

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Changing a ZonePlayer's Operating Mode

You can use a ZonePlayer simply to extend the wireless range of your Sonos Digital Music System and not to play music by placing the ZonePlayer into *Sonos Extender* mode. A ZonePlayer operating in Sonos Extender mode is sometimes referred to as a *hidden* ZonePlayer, and will not appear in your **Zones** menu.

The ZonePlayer must already be part of your Sonos Digital Music System in order to change its mode of operation.

To change using Desktop Controller software

1. From the **Zones** menu, select **Set Up Zones**.
2. Highlight the ZonePlayer you want to change, and click **Settings**.
3. Select the **Advanced** tab.
4. Select either **Normal Mode** or **Sonos Extender Mode**, and click **OK**.

To change using Sonos Controller

1. From the **Music** menu, select **System Settings>ZonePlayer Settings**.
2. Select the ZonePlayer you want to change, and click **OK**.
3. Select **ZonePlayer Mode**, and click **OK**.
4. Select either **Normal** or **Sonos Extender** mode, and click **OK**.



Chapter 2: ZonePlayer Setup and Operation

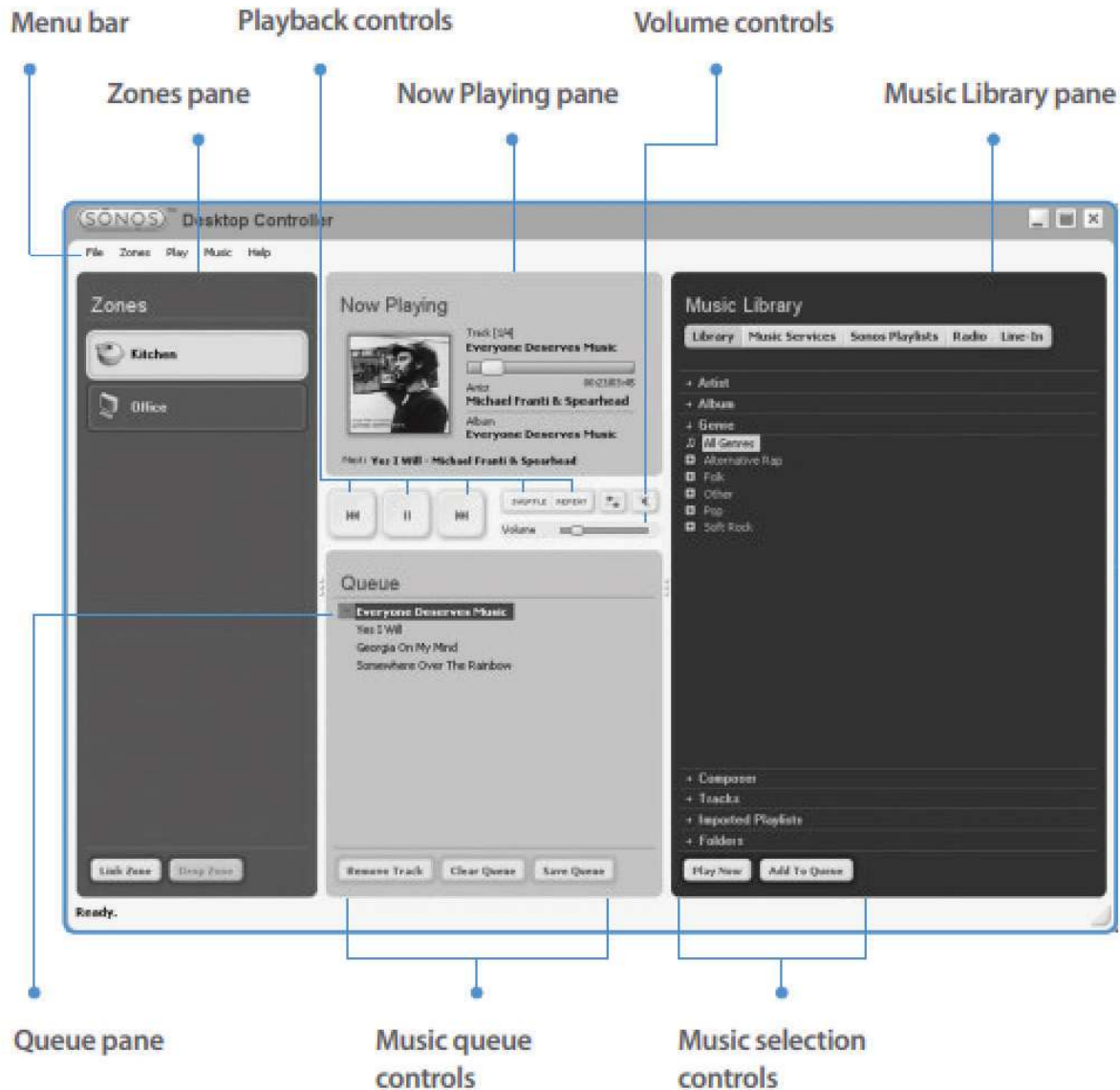
2-9

When a ZonePlayer is in *Sonos Extender* mode, it does not display in your **Zones** menu. When you change it back to normal operation using the **ZonePlayer Settings** screen, it will appear as an *unnamed* zone and you can rename it at that time.

IA at 376-377.

92. The desktop controller main screen shows the following options, which include “zones,” “link zone,” “drop zone,” and others such as line-in, equalizer, and volume:

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IA at 387; Lambourne Dep. Ex. 1077 at 25.

93. Included in these settings are the ability to adjust sound settings for a ZonePlayer and volumes for individual zones within a zone group. Likewise, the system can mute the sound in a zone, or if there is a zone group, all rooms in the zone group would be muted. A user can highlight the zone that he or she wants to mute, mute all zones, unmute all zones, and change equalization settings for zones or zone groups:

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Equalizer

Use to adjust the sound settings for a ZonePlayer, or to adjust volume for an individual zone within a zone group.



Mute

Click to mute the sound in a zone (if you have a zone group, all rooms in the zone group are affected).

Muting a zone or zone group (DCR)


1. From the **Zones** pane, click to highlight the zone you want to mute.
2. Choose one of the following options:
 - Click the **Mute** button. To unmute, click the **Mute** button again.
 - From the **Play** menu, click **Mute Zone**. To unmute, click **Unmute Zone**.

Muting all zones (DCR)

You can temporarily mute all of your ZonePlayers at any time. The track will continue to progress, but there will be no sound emitted.

- To mute all the zones in your household, click **Mute All Zones** from the **Play** menu.
- To unmute, click **Unmute All Zones** from the **Play** menu.

Adjusting sound settings (DCR)

1. Highlight a zone in the **Zones** pane, and then click the **Equalizer** button  to change the sound settings (treble, bass, loudness, balance or volume) for an individual ZonePlayer. (You can also select **Equalizer** from the **Play** menu.)
 - To change the volume for a *zone group*, use the group volume control on the left.
 - If you have two or more zones in a group, use the **Equalizer** window to adjust the volume for each zone individually.

IA at 389; Lambourne Dep. Ex. 1077 at 27.

94. If the sound is muted, the track will continue to tick, and instead a user may pause the household if a user wants to stop the Sonos System from streaming music.

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Pausing the Household (DCR)

If you want to stop your Sonos Digital Music System from streaming music, click **Pause All** from the **Play** menu. Your ZonePlayers will remain “off” until you click **Play** to restart each zone or zone group.

IA at 389; Lambourne Dep. Ex. 1077 at 45.

95. The Sonos System allows a user to manage zones and zone groups within the system. The user can view the music currently playing in any zone, play a different song in each zone, or can group zones together to play the same music.

Managing Your Zones (DCR)

The **Zones** pane allows you to view the music currently playing in any zone in your house. You can play a different song in each zone, or you can group zones together to play the same music when you are having a party, or anytime you want the same music selection to play in more than one room. Zones can be managed from either the **Zones** pane or the **Zones** menu. From either of these, you can:

- See an alphabetical list of the zones in your house
- Link zones together to form a zone group
- Drop a zone from a zone group

Music will continue to play while you browse your zone settings. The current zone is highlighted on your screen, and the music selections you make will play in that zone.

IA at 390; Lambourne Dep. Ex. 1077 at 28, 1078 at 2-3.

96. The Sonos System could create zone groups that comprise a group of zones. In a zone group all the zones within the group play the same music in synchrony. The user can link or drop zones from a group while music is playing, and in that scenario any zone linked will automatically drop their current music queue and begin to play the music from the highlighted zone. A user can also link all ZonePlayers with one touch by selecting “All Zones-Party Mode.” Further, if a user selects to link a zone from a zone where there is no music playing, any zones that are linked to it will also be silent.

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Zone Groups

A zone can be grouped together with any other zone(s) to form a zone group. This will cause all the zones in the zone group to play the same music in synchrony. You can link or drop zones from a group while the music is playing. You can also link all the ZonePlayers in your house with one touch by selecting **All Zones-Party Mode**.

Linking a zone

You can create a zone group first and then select music to play, or you can add a room to a zone group where music is already playing.

Note: Any zones you link will automatically drop their current music queue and begin to play the music queue from the highlighted zone. You may sometimes want to save your music queue as a Sonos playlist before linking a zone. See "Sonos Playlists (DCR)".

1. From the **Zones** pane, highlight the zone you want to link to another zone or zone group.
2. Choose one of the following options:
 - Click **Link Zone**, or
 - From the **Zones** menu, click **Link Zone**.
3. Select a zone to add to the group, and click **OK**. If you want to join all the zones in your house to this music queue, select **All Zones-Party Mode**. All of your

IA at 390; Lambourne Dep. Ex. 1077 at 29-31, Lambourne Dep. Ex. 1078 at 3-5.

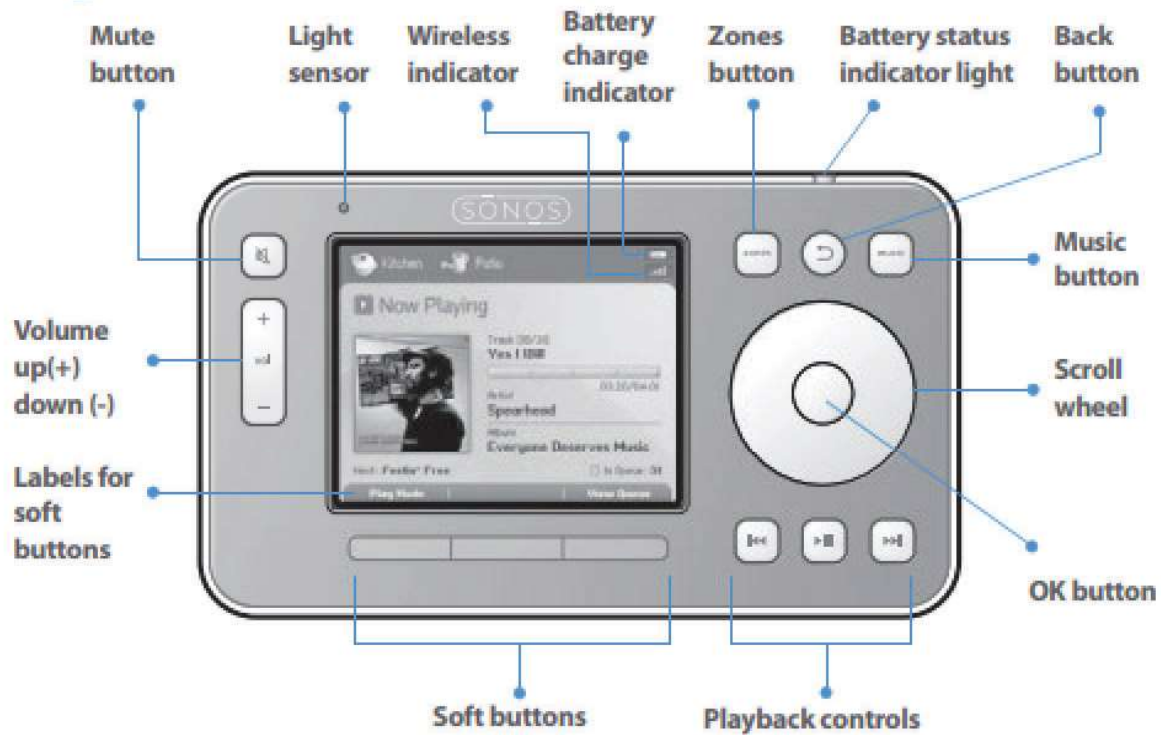
Note: The order in which you add zones makes a difference. If you select **Link Zone** from a zone where there is no music playing, any zones you link to it will also be silent.

IA at 391; Lambourne Dep. Ex. 1077 at 29-31, Lambourne Dep. Ex. 1078 at 3-5.

97. The Sonos controller UI is shown as follows, with soft buttons, Zones buttons, and others:

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Using the Controller



IA at 436; Lambourne Dep. Ex. 1077 at 60.

98. The Zones button allows a user to select a zone to play music in, view the music selections playing in each room, or to create or modify zone groups to share music across zones synchronously.

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Controller navigation**Zones**

Use the **Zones** button to select a zone to play music in, to view the music selections playing in each room, or to create or modify *zone groups* in order to share the same music across zones.

**Music**

Use the **Music** button to browse or select music, manage your music queues, access playlists, and change the default settings for a Sonos ZonePlayer or Controller.

**Back**

Use the **Back** button to return to the previous screen.

IA at 436; Lambourne Dep. Ex. 1077 at 60.

99. The user can mute a zone and mute all zones in the house from the controller.

Controller volume control**Volume Control**

Increases (+) or decreases (-) the volume in any zone, or across a zone group.

**Mute**

Temporarily silences the music in a zone (within a zone group, the mute button automatically mutes the last room where volume controls were adjusted.) Press the **Mute** button again to unmute.

Mute All

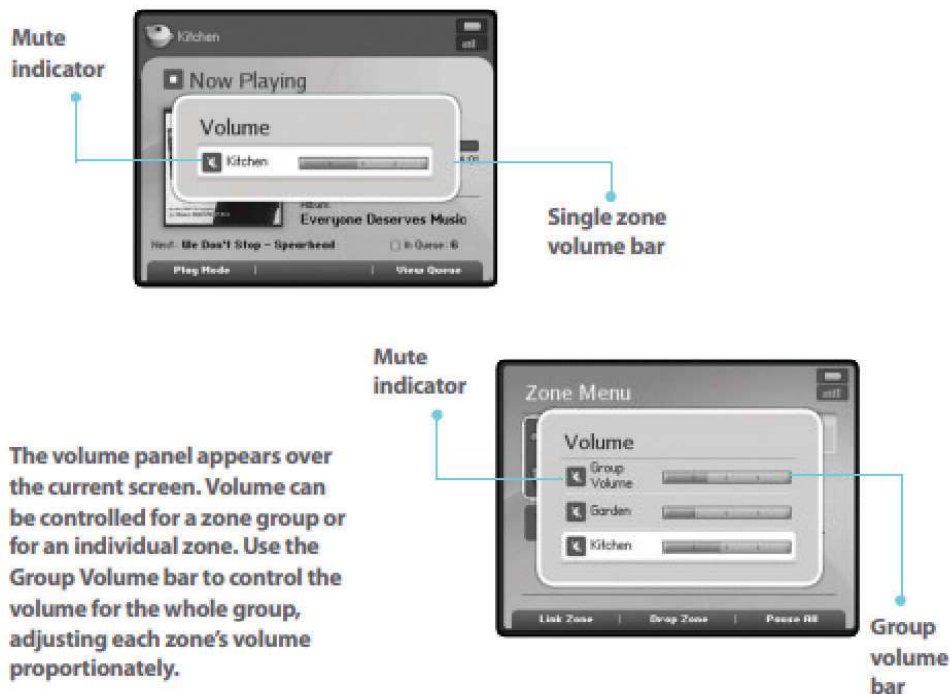
To mute all zones in the house, press and hold the **Mute** button for 3 seconds. To unmute all zones, press and hold again for 3 seconds.

IA at 438; Lambourne Dep. Ex. 1077 at 27, 28, 61, 62.

100. The following diagrams show how a user can control the volume of zone groups that the user creates.

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Controller - Volume Settings



1. From the **Zone** menu, use the scroll wheel to highlight the zone you want to change the volume settings for.
2. Use the **Volume Up** and **Down** buttons to change the volume to the desired level.
3. Touch **OK**, and the Volume panel disappears.

Muting zone or zone group

- To mute a zone or a zone group, touch the **Mute** button (within a zone group, the mute button automatically mutes the last room where volume controls were adjusted.)
- Touch the **Mute** button again to unmute.

IA at 440; Lambourne Dep. Ex. 1077 at 12, 27.


101. The user can manage the zones and zone groups using the Sonos controller. The user can see an alphabetical list of the zones and which music has been selected for each zone, group zones together into zone groups, drop zones from a group, and turn the system off.

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Managing Zones Using Controller

Press the **Zones** button on your Controller to:

- See an alphabetical list of the zones in your household, along with the music currently playing in each zone
- Group zones together to play the same music across zones (create a *zone group*)
- Drop a zone from a zone group
- Turn off your music system

Music continues to play while you browse the **Zone** menu. Use the scroll wheel to highlight a zone, and touch **OK**. The **Now Playing** window appears. You can then press the **Music** button  to change the music selection for that zone.



Touch the Zones button to view the music playing in each room

IA at 442; Lambourne Dep. Ex. 1078 at 2-3.

102. The user can group zones together in “with any other zone” to form a zone group. The user can link and drop zones while music is playing, and the music within the group will play synchronously throughout the group. Zones added to a group will begin playing the music that was playing in the zone group.

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Zone groups

A zone can be grouped together with any other zone(s) to form a zone group. This will cause all the zones in the zone group to play the same music in synchrony. You can link and drop zones from a zone group while your music is playing. You can also link all the ZonePlayers in your house with one touch by selecting **All Zones-Party Mode**.

Note: Any zones you add to a group will automatically drop their current music queue and begin to play the music that is playing in the zone group. You may sometimes want to save your music queue as a Sonos playlist before linking zones. See Saving a Sonos Playlist.

Linking a zone

1. Press the **Zones** button on your Controller.



2. Highlight the zone or zone group that you want to add a zone to, and touch **Link Zone**.

Note: The order in which you add zones makes a difference. If you select **Link zone** from a zone where there is no music playing, any rooms you link to it will also be silent.

3. Highlight the zone you want to add to the group, and touch **OK**. If you want to join all the zones in your house to this music queue, select **All Zones-Party Mode**. All of your ZonePlayers will then play the same music in synchrony.

IA at 443; Lambourne Dep. Ex. 1078 at 2-4.

103. There are a number of settings for the ZonePlayer accessible through the controller, including equalization, naming, line-in and line-out, and ZonePlayer mode.

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ZonePlayer Settings



Music Equalization

You can change the sound settings (treble, bass, loudness, or balance) for each individual ZonePlayer.

1. From the **Music** menu, select **System Settings>ZonePlayer Settings**, and touch **OK**.
2. Use the scroll wheel to select a zone, and touch **OK**.
3. Select **Music Equalization**, and touch **OK**.
4. Select a setting, and then use the scroll wheel to make adjustments to the control slide that appears on the screen, and then touch **OK**.
5. To change the settings for a ZonePlayer back to their original default values, select **Reset All**.

Renaming ZonePlayers

1. From the **Music** menu, select **System Settings>ZonePlayer Settings** and touch **OK**.
2. Use the scroll wheel to highlight the ZonePlayer name you wish to change, and touch **OK**.
3. Select **ZonePlayer Name**, and touch **OK**.

IA at 455; Lambourne Dep. Ex. 1078 at 13-14; Lambourne Dep. Ex. 1077 at 24, 50; Lambourne Dep. Ex. 1078 at 12, 18.

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104. The user can select a new name from a list of available names, or can enter a unique name by entering a new name.

4. Use the scroll wheel to select a new name from the list, and then touch **OK**.

5. You can also type a unique name by selecting **Enter New**.

- Use the scroll wheel to select each letter, touching **OK** after each entry.
- Touch **Accept** to accept the new name, or touch **Cancel** to leave the screen without making a change.

IA at 456; Lambourne Dep. Ex. 1077 at 24.

105. The ZonePlayer may receive software updates from Sonos.

ZonePlayer software updates

If a ZonePlayer's software version gets out of sync from the rest of your Sonos Digital Music System components, you will see the following message displayed on your **Zones** menu:



One or more ZonePlayers may need to be updated if you purchase a new ZonePlayer with a later software version, or if you plug in a ZonePlayer that was not in use when you performed your last software update.

You will also see this message if you have already updated your music system using the Controller. This message will indicate that the Desktop Controller software needs to be updated.

IA at 460; Lambourne Dep. Ex. 1077 at 42-44, 50, 52; Lambourne Dep. Ex. 1078 at 22, 23, 24.

106. The Sonos System can also provide "about" information, including dates of the software, version numbers, serial numbers, etc. The dates below pre-date the '885 patent.

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About Your Music System

If you make a call to Sonos Customer Support, you may be asked for specific details regarding your Sonos Digital Music System. You can find this information by choosing one of the following options:

- From the **Music** menu on your *Sonos Controller*, select **System Settings>About Your Digital Music System**.



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Or,

- From the *Sonos Desktop Controller for Macintosh* menu bar, click **Sonos>About Sonos.**



IA at 473-474; Lambourne Dep. Ex. 1078 at 34.

107. I have inspected Sonos players that have been made available for inspection in this case.

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108. In order to understand the design and operation of the Sonos System, I have also analyzed source code that I understand reflects the operation of the Sonos System that was released before Sonos's alleged invention date.

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3. The Sonos Webpage

109. I understand that the Sonos Webpage was published no later than March 22, 2005 or May 5, 2005, making it prior art under at least 35 U.S.C. § 102(b) and 102(a) for the same reasons discussed above. *E.g.*, IA at 141. The Sonos Webpage describes the Sonos System that is prior art under at least those same sections.

110. The Sonos Webpage is a publication describing features similar to those of Millington (WO 2005/013047), including a handheld controller with a user interface. The user interface, shown below, allows for “scrolling through your music library, browsing titles, viewing album art, queuing up tracks, choosing zones, and more, the large, full-color LCD screen and scroll wheel make it a real cinch.” IA at p. 141. A user can also use the user interface to “build a separate queue of music to play in each zone or group of zones in your house” and “control what zone or group of zones plays the music selected, and set shuffle/repeat playback as desired.” IA at p. 137.



IA at p. 141 (annotated).

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It's like having a giant jukebox of music at your fingertips.

Now you can have instant access to your entire digital music collection, including all your playlists, from anywhere in your home — inside or out. That's because the Sonos™ Controller uses Sonosnet™, our secure wireless mesh network that extends the range of your Controller throughout your entire home. Which means you don't have to run to your PC every time you want to turn on, change or turn off your music. And, you can control everything from volume to music selection in any room from anywhere.




\$399.00 USD

[more images](#)[Order Now](#)

When it comes to scrolling through your music library, browsing titles, viewing album art, queuing up tracks, choosing zones, and more, the large, full-color LCD screen and scroll wheel make it a real cinch. No other digital music system lets you do all that.

Id. (annotated).

Controller Features		Specifications 
Feature	Description / Benefit	
Wireless, handheld control		
Integrated, multi-room control	Lets you control what music is playing in every room in your house, from anywhere in your house. Control of your music is not tied to the room where you're listening.	
Sonosnet™	A secure, peer-to-peer wireless mesh network that extends the range of the Controller to any room in your house, even outside. Avoids sources of wireless interference by communicating with the closest ZonePlayer, rather than through one distant control point.	
Multiple options for music selection	Browse your digital music collection by Artist, Album, Genre, Track Name, Composer, or Playlist.	
Queue-based music playback	Makes it easy to build and edit lists (queues) of songs to play, and to save lists for future playback.	
Multiple music queues	Lets you use any Controller to build a separate queue of music to play in each zone or group of zones in your house.	
Flexible playback options	Control what zone or group of zones plays the music selected, and set shuffle/repeat playback as desired.	
High-capacity Lithium Ion battery	Lasts for over a week between battery charges, assuming typical usage.	
Full-color LCD screen and scroll wheel		
High-resolution color screen	Makes everything on the screen brighter and easier to see, including full-color album artwork, if available.	
Scroll wheel selector	Makes it quick and easy to scroll through large music collections and make selections.	
Intuitive button layout	Provides complete music management and control. Two buttons are dedicated to providing direct access to the Controller's main menus (Music and Zones).	
Movement sensor	Automatically turns the Controller on when you pick it up.	
Backlit buttons and screen	Backlit buttons and screen make the Controller easy to operate in low-light conditions.	
Light sensor	Turns backlighting on only when necessary to conserve battery power.	

Id. (annotated).

111. The Sonos webpage discloses different genres of digital music in many different

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“rooms” such as the kitchen, living room, playroom, or the lawn:



IA at 119.

112. The Sonos webpage further discloses listening to music in “two rooms of your house” with an introductory bundle, and the ability to “simply add more ZonePlayers as needed”:



IA at 121.

113. The Sonos webpage notes that the Controller is a full-color LCD controller with a

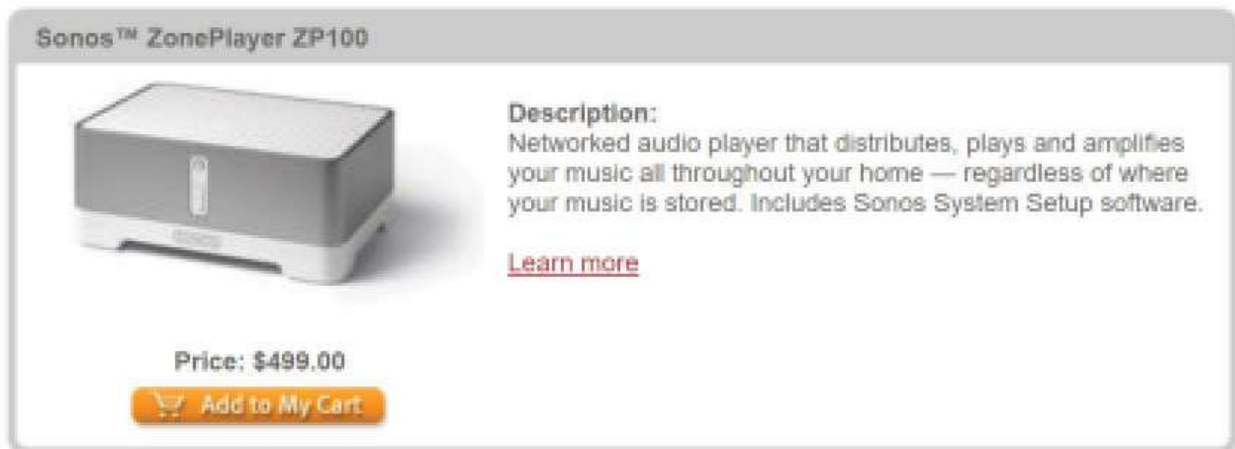
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scroll wheel that lets a user control all the music and “all” zones from anywhere in the home:



IA at 121.

114. The Sonos webpage notes that the ZonePlayer 100 “distributes, plays, and amplifies” music “all throughout” the home and includes Sonos System Setup Software.



IA at 121.

115. The Sonos webpage notes that the system allowed a user to play any song in any of the user’s rooms, regardless of where the music was stored:

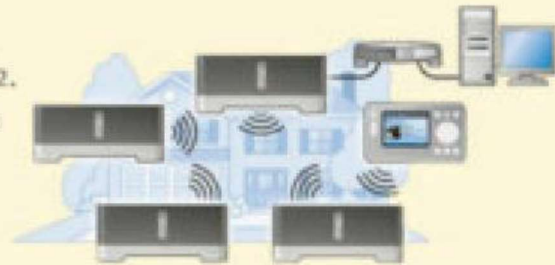
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Play any song. In any room. From anywhere.

Sonos is the first and only digital music system that lets you play all your digital music, all over your house—and control it all from the palm of your hand. Best of all, you don't need a PC in every room, a music server or a wireless network. Just a Sonos™ ZonePlayer and speakers in the rooms of your choice and a Sonos™ Controller in hand to access all your digital music, no matter where it's stored—on your PC, Mac or Network Attached Storage box.

With a Sonos™ Digital Music System you can:

- Simultaneously play the same song or different songs in as many rooms as you'd like — up to 32.
- Easily access your entire digital music collection with a full-color LCD screen and scroll wheel.
- Wirelessly control all your music and all your rooms—from anywhere with Sonosnet™.
- Enjoy great sound in every room.



IA at 123.

116. The Sonos webpage notes that “a room doesn’t always define the space where you want to listen to music—think living room + dining room” The Sonos webpage also notes that the Sonos System can play “the same song simultaneously in different zones without echoes or delays” as well as play “different songs simultaneously in different zones.”

It distributes. It plays. It amplifies.

The Sonos™ ZonePlayer brings great sounding music to any and every room in your house—regardless of where your music collection is stored. And we do mean every room. In fact, you can play the same song or different songs in as many rooms as you'd like. Simultaneously. No other digital music system lets you do that.

If you're still wondering why we called it a ZonePlayer rather than a room player, the answer is simple: a room doesn't always define the space where you want to listen to music—think living room + dining room, not to mention your backyard, garage and swimming pool.



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ZonePlayer Features		Specifications
Feature	Description / Benefit	
Multi-room digital music		
Built-in wireless capability	Connects ZonePlayers wirelessly when a wired Ethernet connection is not available.	
Sonosnet™	A secure, wireless mesh network that streams music wirelessly to other ZonePlayers, avoiding sources of wireless interference.	
Multi-zone synchronous playback	Plays the same song simultaneously in different zones without echoes or delays.	
Multi-stream playback	Plays different songs simultaneously in different zones.	

IA at p. 125.

117. The Sonos webpage notes that the PC and Mac software provided with the Sonos System offered the same or similar controls as provided in the Controller including, as shown below, the ability to group zones and play music.

It's the software to help get you started.

- [PC software](#)
- [Mac software](#)

PC Software

Designed with a user interface to accommodate a larger screen, the Sonos™ Desktop Controller software will guide you through both set up and music sharing. It offers all the same functionality as the Sonos™ Controller, but instead of being in the palm of your hand, it's all on your desktop.

Features

- Easy-to-use Assistant for set up and music sharing. Set up music folders on your hard drive so they can be shared across all ZonePlayers.
- Control of your Sonos™ Digital Music System from your desktop.
- Add and edit your choice of Internet radio stations.



[View large image](#)

IA at p. 129.

118. The Sonos webpage describes that the Sonos System may be set up in multiple

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zones, controlled from a controller, and play music synchronously in those zones:

Here's how it works:

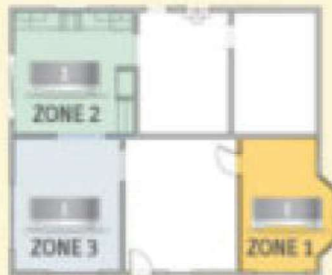
The components:



The layout:



Keep your PC and digital music right where they are— in your office, bedroom, wherever.



Put Sonos ZonePlayers (and speakers) in all the zones where you want music— there's no limit.



Access all your music and all your zones from your wireless Sonos Controller— which can be absolutely anywhere.

The result: A multi-room digital music system that's easy to set up and even easier to use.



IA at p. 135.

119. The Sonos Webpage is analogous to the '885 patent because it is in the same field of endeavor, “controlling or manipulating a plurality of multimedia players in a multi-zone system.” '885 patent at 1:30-34. For example, the Sonos Webpage, like the '885 patent explains that it is directed to a “digital music system that lets you play all your digital music, all over your house—control it all from the palm of your hand.” IA at p.123. The Sonos Webpage is also reasonably pertinent to the problem to be solved by the '885 patent, “dynamic control of the audio

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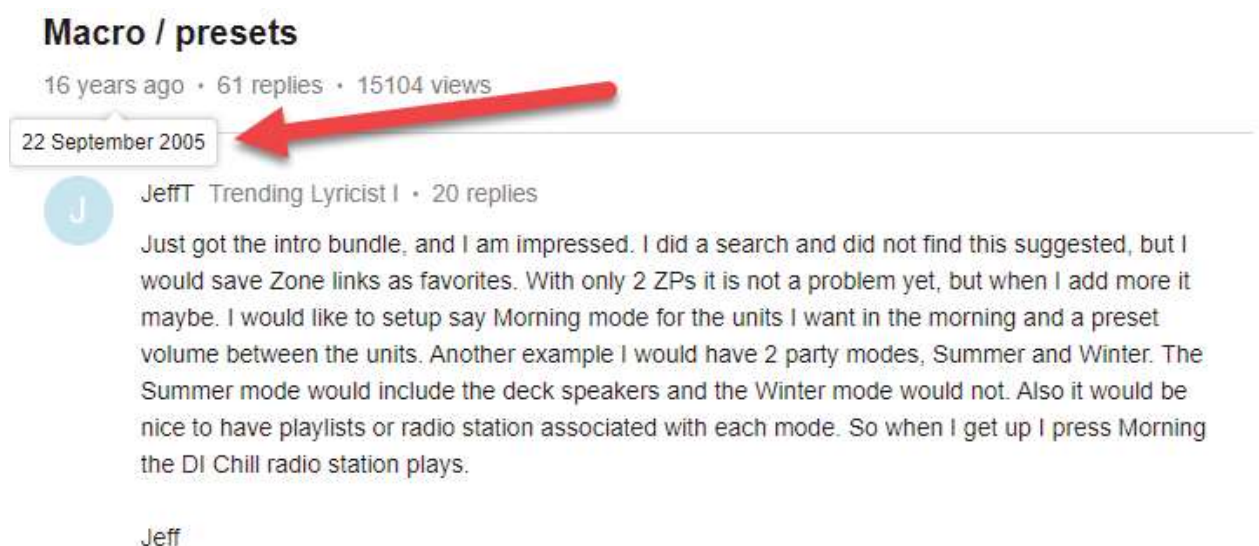
players as a group.” ’885 patent 2:18-24. For example, the Sonos Webpage explains that its disclosures allow a user to group playback devices so that “you can play the same song or different songs in as many rooms as you’d like. Simultaneously.” IA at p. 125, 127, 129, 131.

B. The Sonos Forums

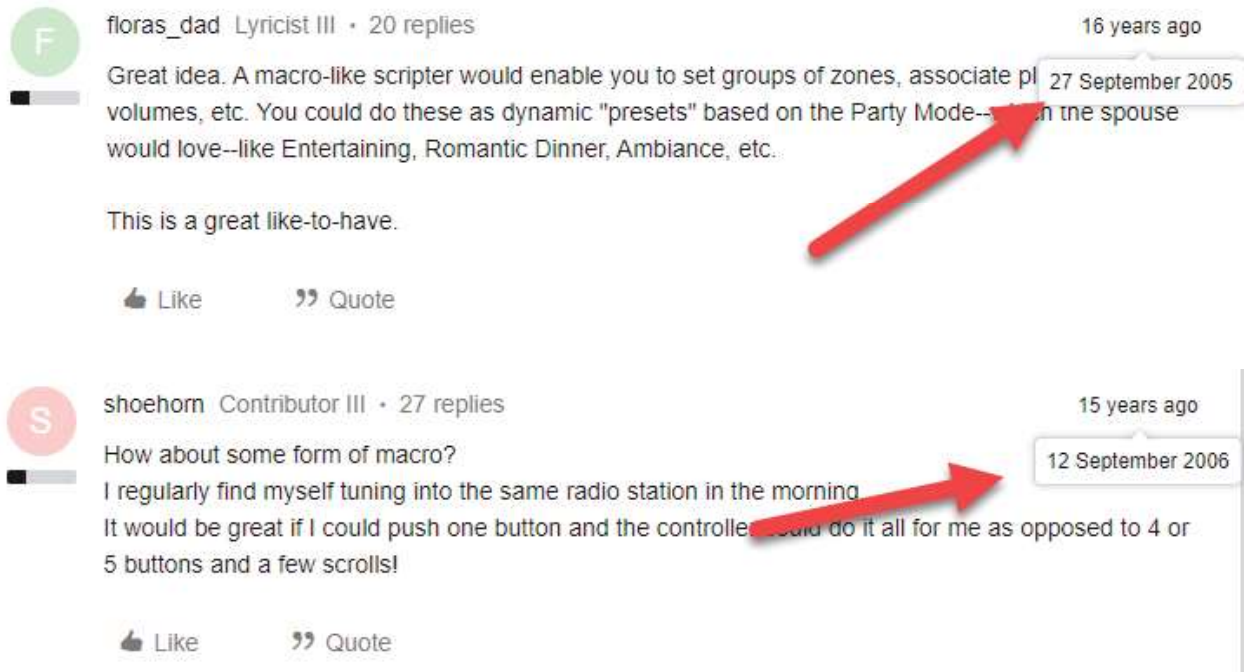
120. I understand that the Sonos Forums were publicly available at least as of September 2005, making them prior art under 35 U.S.C. 102(a), 102(b), and 102(f).

121. Mr. Farrar, who was employed in customer support at Sonos, worked on and has testified to the Sonos Forums. Farrar Dep. Tr. at 38:19-24; 48:23-49:2. He posted on the Sonos Forums and had roughly 824 replies to Forum posts. *Id.* at 51:2-15; Ex. 5. He also testified that he did not have reason to believe that the dates on the exhibits introduced at his depositions—which were prior art Sonos Forum posts—were inaccurate. *Id.* at 52:5-54:5.

122. In the Forum Post entitled “Macro / presets,” users suggested various features for the Sonos products. Farrar Dep. Ex. 6. I have excerpted certain posts within this thread below. First, however, I note that as annotated below, this Forum post predates the earliest claimed priority date of the ’885 patent as well as Sonos’s claimed invention date, which is shown by hovering over the date of those posts.



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See Farrar Dep. Ex. 6-7 (annotated) (screenshot taken hovering over post date to expose full date).

123. I have excerpted certain posts within this thread below. It is notable that Sonos's product management team (likely including Mr. Lambourne) was made aware of the issues raised in the Forum thread. Farrar Dep. Tr. at 91:13-94:7; Lambourne Dep. Tr. at 143:7-144:11.

Q Did any of the product management teams review the forums to identify consumer pinpoints?

THE WITNESS: I imagine that might have happened, but I couldn't say the specific person or time.

Q Did you ever review the Sonos forums to determine whether they were particular consumer pain points with any of the Sonos products?

THE WITNESS: I read forum posts from time to time, yes.

Q Why did you read forum posts from time to time?

THE WITNESS: To see what people were saying about our product.

Q How did the feedback that you were getting through the Sonos forums affect your work?

THE WITNESS: I think -- I mean, it would depend what the comments were, but people might describe situations in which they were not happy, which we might try and solve for, or for situations which they were happy which we know that that was a good thing. Generally feedback.

Lambourne Dep. Tr. at 143:7-144:11.

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124. Mr. Robert Lambourne, who was responsible for the UX aspects of the Sonos System, testified that the alleged invention addressed the same topic as the Forum posts below and believed that the concerns users were showing was also addressed in the same way by the alleged inventions. Lambourne Dep. Tr. at 128:8-131:17.

Macro / presets


16 years ago • 61 replies

 JeffT

Just got the intro bundle, and I am impressed. I did a search and did not find this suggested, but I would save Zone links as favorites. With only 2 ZPs it is not a problem yet, but when I add more it maybe. I would like to setup say Morning mode for the units I want in the morning and a preset volume between the units. Another example I would have 2 party modes, Summer and Winter. The Summer mode would include the deck speakers and the Winter mode would not. Also it would be nice to have playlists or radio station associated with each mode. So when I get up I press Morning the DI Chill radio station plays.

Jeff

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 kengreenwood

16 years ago

I would find this functionality useful as well... I find myself manually linking and unlinking zones and setting volumes in a very repetitive way. I would think that a macro type function would be able to save those manual steps into a single selection of a favorite.

 Majik

16 years ago

Yes this sounds good.

Something like the ability to create a "zone group" which appears on the zone list, and perhaps the ability to hide/lock individual zones.


I'm not sure how the "Preset volume" and source/playlist would work in this context. You wouldn't necessarily want this activated every time you selected the zone group, or how would you select the group to change the volume, etc.?

Perhaps we need a "presets", page (perhaps using the soft-keys on the Zone screen) to allow a preset to be initiated. This preset could comprise a zone (or zone group), a volume profile, and a source or playlist, or it could be a macro sequence.


Discuss..... :)

Cheers,

Keith

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 floradad

16 years ago

Great idea. A macro-like scripter would enable you to set groups of zones, associate playlists/i-radio, volumes, etc. You could do these as dynamic "presets" based on the Party Mode--which the spouse would love--like Entertaining, Romantic Dinner, Ambiance, etc.

This is a great like-to-have.

 sinuswave

15 years ago

Just stumbled across what might make for an interesting feature. This came from discussion with my wife over an easier way for her to operate the remote controller. More specifically, the idea was born as we were having a glass of wine on the patio the other evening (listening to Sonos near the pool of course).

So you spend some time building a playlist and decide to let er rip throughout your house. My wife will spend a while (sometimes a long while) tweaking the volumes by zone, zone structure (play here - not here, etc) and pretty much fine tune the listening environment in our house to enjoy as she goes about her daily activities. It might be a hard rock playlist one day, or a love song playlist the next, each having a seperately crafted listening ambience as one moves throughout the house.

(Anyone guessed the feature yet?)

Yes, why not incorporate a feature when special playlists are saved/stored the user can set the zone structures, zone volumes, zone on/off, etc and allow it to be SAVED with the playlist. This way you go to playlist, select your carefully crafted artistic masterpiece and the whole environment adjusts right before your very ears (so to speak).

So when I go to work in the morning, and my wife fires up the playlist she wants, all things adjust automatically just the way she likes it, every single time.

Talk about upping the WAF radically ... this could do it.

P.S. I like it too what say you Sonos?

{Sorry if this is repeat of earlier recommendation I did search under keywords "memorized features"}

 Majik

15 years ago

This could be called "Scenes".

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Charles R

15 years ago

I like the concept but would prefer saving the configuration under System Settings - ZonePlayer Settings.



DigitalBoy

15 years ago

I like the 'scene' concept, but also agree that this is not related to playlists. You should be able to select a scene regardless of what you are playing - on the fly queue, radio, playlist etc.

I guess optionally, a playlist could be associated with a scene. But a scene is distinct, and not limited to a playlist is my point.

db



sinuswave

15 years ago

Ok. I see the valid point of stored settings for the Zone Players in lieu of "In association with" playlists. However, being able to attach/link a playlist to a zone player "scene" would be most useful. This would keep the user from having to select the "scene" each time for a selected playlist establishing a consistent listening experience. The "scene" definition was brilliant BTW. You could develop romantic diner at home scene, pool party scene, baby asleep scene, working in home office scene, etc.

Still think it sounds like it would be worth looking into as I can not see that it would be too complicated to accomplish in future software upgrades.

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 John Ashman

15 years ago

Whatever folder you assign as your favorites. Perhaps 3 or 4 folders, one for each person in the family. So "A" could be "dad's", "B" could be "mom's", etc. Or a single person might have "A" attached to his "R&R favorites" and "B" attached to "Music for dates". Then all you have to do is press one of the buttons and "blammo", the folder starts playing with a pre-programmed setting of whether it in random or not.

I am assuming you understand that Sonos uses folders, right? Or should I call them "playlists"?

 Majik

15 years ago

Playlists makes more sense in a Sonos context.

A "folder" is where you store the music at a file-system level.

Now I understand what you're suggesting, I have to say I'm not in favour. There are a limited number of controls (and therefore functions) on the Sonos controller interface, and I'm not sure I would like to see them used up on

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something so trivial and that, I suspect, most people won't use.

Cheers,

Keith



 DigitalBoy

15 years ago

No one is trying to be difficult re folders vs playlist. Folders to pretty much everyone would mean operating system directories, not groups of tracks. These are almost universally referred to as playlists, not just within Sonos, but any digital music player.

I think I'm with Keith on this. The playlist list is only a click or so away, and given the limited number of buttons, I don't think this is good use of them. It would mean removing view queue, add to queue type functionality - functionality that will likely have higher use than favorites.

Having said that, I think John touches on a good point. I believe the organisation of imported playlists, Sonos playlists and personal radio streams could be better organised. The user should be able to merge these and create hierarchies. Although I appreciate the technical angle, from a pure user perspective having to go into different menus to access these, and seeing only 1 giant level is not enough. For example, the top level should simply be favorites (for which a soft button could jump to), then beneath that a user could have Mum, Dad, Johnny for example, then in each of those subgroups, playlists and/or further subgroups. In other words, allow the user to decide how he/she wants to organise it. Similar to Favorites in IE.

db

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 John Ashman

15 years ago

Well, look, I'm a dealer and having a "one touch" operation would be a HUGE selling point. As in "here, press this". Here's what I have to do to get *my* music going:

Press "Music"

Spin dial

Press "imported playlist"

Spin dial

Press enter to select

Press enter to say "play now"

Press play mode

Spin dial

<https://en.community.sonos.com/music-services-and-sources-228994/macro-presets-4528>

6/19

4/28/22, 10:50 AM

Macro / presets | Sonos Community

Press enter to select shuffle

I think I even missed something. So there's nearly 10 steps to get my favorite "playlist" going the way I want.

Also, I'm not suggesting that the current unit should have this feature, but there will be a next generation controller

and this feature should *absolutely* be on there. To suggest that the feature is "trivial" and that "no one would use" it is grossly out of touch with the people that use the system. One touch? Or ten? Gee, what do I prefer?



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Majik

15 years ago

You've missed about 100 steps in your "1-touch" scenario: those required to construct all of the different playlists.

Whilst this might be useful as a quick dealer demo, I can't see people wanting it in real life.

The "1-touch" benefit completely goes out the windows as soon as you add in the playlist maintenance. I actually doubt very many people listen the the same, small, fixed set of playlists day in-day out.

For instance, I have a set of playlists for different things (e.g. 60's music), but I rarely use them. I normally prefer to select my music on a whim, based on scanning through my collection and seeing who I fancy listing to at a particular time.

You haven't convinced me that this isn't a trivial feature. There are a large number of other functions that could apply to having their own dedicated button. Given a choice of these I would reckon "selecting a predefined playlist" would be quite far down on most people's list.

As a user I would be totally against having a feature whose main use was as a Sales tool, but which was of little use under normal conditions.

Now, if you expand this to some sort of "macro" button where people (including Salesmen) can pre-define their own preferred actions against a "1-touch" button, then it starts to make some sense.

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 John Ashman

15 years ago

Majik wrote:

You've missed about 100 steps in your "1-touch" scenario: those required to construct all of the different playlists.

Perhaps, but you only have to do that *once* with a few minor updates a few times a year. You don't have to do it *every* single time as you do with starting a playlist

Whilst this might be useful as a quick dealer demo, I can't see people wanting it in real life.

You should get out more and actually speak with end users. I guarantee every one of my customers would use this virtually every day. I certainly would.

The "1-touch" benefit completely goes out the windows as soon as you add in the playlist maintenance. I actually doubt very many people listen the the same, small, fixed set of playlists day in-day out.

That's why I call it a "favorite" button. I actually *do* listen to one playlist just about every day, unless I'm specifically in the mood for a specific genre. And it would be *far* more useful for a family.

For instance, I have a set of playlists for different things (e.g. 60's music), but I rarely use them. I normally prefer to select my music on a whim, based on scanning through my collection and seeing who I fancy listening to at a particular time.

That's you. But you shouldn't be telling other people what they won't use. I can get a list of people who *will* use the feature if need be.

You haven't convinced me that this isn't a trivial feature. There are a large number of other functions that could apply to having their own dedicated button. Given a choice of these I would reckon "selecting a predefined playlist" would be quite far down on most people's list.

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Thankfully, I don't care if you're convinced or not. You don't have to buy it or use it. I just care if Sonos is listening. But I'm kind of annoyed that you're standing in the way of progress here.

As a user I would be totally against having a feature whose main use was as a Sales tool, but which was of little use under normal conditions.

Don't use it then. Then I'm "totally against" internet radio or Rhapsody because *I* don't use it. Get rid of the color screen. I don't need a sub out, take it away. See how that works? I can come up with half a dozen useful features that I don't use that *you* probably couldn't live without.

Now, if you expand this to some sort of "macro" button where people (including Salesmen) can pre-define their own preferred actions against a "1-touch" button, then it starts to make some sense.

Nothing wrong with that. It could even be your favorite internet radio station. See, adding to an idea is better than complaining about it. Of course, I'd love to know what is behind your negative, anti-sales person attitude. We're the guys that actually talk to customers on a daily basis and support the company with actual income.

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Majik

15 years ago

John Ashman wrote:

You should get out more and actually speak with end users.

Perhaps you should get out a bit and speak with end-users too.... ones that have actually been users of the system for 6 months or so.

Having been a Sonos user for over a year (long enough to know the difference between "folders" and playlists"), and having been a member of this forum for most of that time, I think I have a good view of what users are asking for.

One of the most common requests on this forum is better playlist/queue management. This implies people don't program up a handful of playlists and then listen to the same one day in, day out for the next 6 months.

Conversely this is the first time I can recall anyone asking (or even suggesting) a dedicated playlist hot-button.

Most of the suggestions on this forum that have merit are quickly followed up by other users saying "yes please", or "sounds like a good idea". This one hasn't so draw your own conclusions.

I guarantee every one of my customers would use this virtually every day. I certainly would.

I think you are wrong. I'm not a betting man, but if it was feasible I would put a bet on the vast majority of your users NOT using this (in the limited form you suggest) regularly after a year. The fact what you're suggesting is

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users not using this (in the limited form you suggest) regularly after a year. The fact that you're suggesting is simply too restrictive, and adds very little benefit. In essence it is placing too much value on a relatively trivial function which takes a small number of button presses in reality.

Now, user-programmable macro-buttons... that would have some merit.

*That's why I call it a "favorite" button. I actually *do* listen to one playlist just about every day, unless I'm specifically in the mood for a specific genre. And it would be *far* more useful for a family.*

I have some playlists for some members of my family. Guess what? They never use them. Playlists has to be one of the most underused features of Sonos in our household. I may be unique, but I don't think I am, and even when they are used, we mix a match (maybe select 2 different playlists and add to the queue and randomise).

I think one of the joys of Sonos is the ability to explore the music we have. Having a fixed playlist which to use every day doesn't appeal to me.

*That's you. But you shouldn't be telling other people what they won't use. I can get a list of people who *will* use the feature if need be.*

And what you are describing is you. You can't honestly speak for your customers unless you go around each of their homes several months after they have bought their Sonos system, and spend a few days observing their useage habits.

If you said your job was a GUI designer I might have placed more credence on your views. I find it noteworthy that of all of the music systems out there, most of whom have been designed with professional experts in ergonomics, usability, and interface design, I can't think of a single one that has the feature you propose.

But I'm kind of annoyed that you're standing in the way of progress here.

This is NOT progress, and the fact you make such a facile statements as this makes me lose a lot of respect for your suggestions.

Progress is a steady improvement. This, to me, is just a change with a limited benefit to a very limited portion of the user base.

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See, adding to an idea is better than complaining about it.

You should also pay more attention. I did add to that idea. I said it would have more merit if it was they were generic programmable hot-buttons, not fixed-function playlist-only ones.

I'm not arguing against progress. I'm arguing that the idea should needs more research and thought. That in itself
<https://en.community.sonos.com/music-services-and-sources-228994/macro-presets-4528> 1

28/22, 10:50 AM

Macro / presets | Sonos Community

I'm not arguing against progress, I'm arguing that the idea should needs more research and thought. That in itself it is too limited to be of use for most people.

I'm also not arguing against brainstorming. Brainstorming is coming up with lots of spur-of-the-moment, random ideas. The next stage of this is to qualify them, work out if they are useful or not, and discard the ones which are not. The ones you keep you then refine and work out the wrinkles. If you post such a proposal on this forum then you have to expect some criticism, objections, discussion, and even modification of that proposal.

This is what qualifies these ideas and crystalises peoples views on them, and eventually leads to sensible discussion about new features that would benefit everyone, not just a few, vocal people who dig their heels in because they are emotionally attached to their idea.

I've made suggestions myself, and others have said, "not for me", or "that wouldn't work". The trick is not to take it personally.

Most of the forum members, including myself, are keen to explore and debate new ideas in order to improve the product. Sonos does appear to listen to these, but they debate is often as important as the idea itself. This helps to show the level of desire/support in the user base as well as the users concerns, and often good feedback on how the original suggestion could be improved.

I have provided this feedback: I said the facility was too limited for most people, but expanding the idea to be a generic macro/function button would be better.

Note that this has already been suggested on the forum, and had some support.

Of course, I'd love to know what is behind your negative, anti-sales person attitude. We're the guys that actually talk to customers on a daily basis and support the company with actual income.

I'm not anti-Sales people at all. I've worked in Sales and Sales support myself across a range of markets from retail through to Corporate Sales to large multinationals.

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Tring to twist my arguments into being "anti-Sales" is another example of you being facile and devisive.

What I'm against is making significant changes to a product simply to make a Salesman's life easier. Actually I'm not even against that. If the changes are simple, cosmetic, and effective then I'm all for it. If, for instance, changing the color of the Sonos logo a shade increased Sales by 10% then I'm all for it.

On the other hand, with so many other truly beneficial improvements to the system that could be made, I'm against major changes to the system functionality (especially ones which are significant and expensive) which most people will not use if the primary reason for that change is to make it easier for a Salesman to demo it.

Cheers,

Keith

 DigitalBoy

15 years ago

I'll try to get this back on track. In no way are my comments intended to target a particular view (or person) on these forums.....)

Just trying to understand how most people use Sonos. Playlists are without doubt very useful, and something I use frequently. But it's not my *most* used feature. More often, I randomly queue up tracks/albums/artists etc. No particular pattern etc - just depends on mood, time of day, color of the sky (or type of beverage 😊). I would get very bored, very quickly if I just played a particular playlist over and over.

I do like the idea or better organising the library, with a favorites concept (not limited to playlists), user defined hierarchy folders etc etc. So I could have groups of artists together, or playlists, radio stations etc. All 'mixed' up (differentiated by icon). Similar to a favorites menu in IE etc.

Where the above discussion breaks down for me, is dedicating a button to link to one specific item. I'd rather have the freedom to define my own structure, folders, subfolders etc. Then I can have most used near the top level, and barely used buried deeply in my own folder structure.

Just my 2c.

db

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 John Ashman

15 years ago

I'd like to personally invite all moderators to please delete their unhelpful messages, thank you. Otherwise, I'll have to restart this thread and specifically request at the top "no moderators" and then have a chat with Sonos. If I wanted sarcastic, unhelpful people in my life, I'd sell Sony, thanks.

Back to the subject. I called it "favorite folders" because it's NOT just playlists. It's genres, artists, *whatever*.

Here's the thing about these buttons. They could:

1. Recall a favorite radio station so one press activates it.
2. Recall a single playlist, genre, artist, etc for instant access.
3. Recall *multiple* playlists for instant access, such combining two similar genres or your three different bands or shuffle both you and your wife's music. Your choice.
4. Alternatively, for those that despise the idea so much, have "saved configurations", like saving your linkages for "Party Mode" in which 3 or 4 zones are automatically linked and, optionally, a particular playlist started.

<https://en.community.sonos.com/music-services-and-sources-228994/macro-presets-4528>

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And it would save your preferred play mode as part of the memory.

For those that won't use it, sorry. Not everyone will use every feature, I sure don't. But it would be nice to see a little respect for those that have different needs and wants that yourselves. I don't go around from thread to thread attacking other people's ideas. Let them stand or fall on their own merit. And for god's sake, if you're a moderator, remember what the job entails. You're a referee, not quarterback and certainly not the team owner. Stop trying to throw the game.



Graham - Sonos Avid Contributor I • 824 replies

15 years ago

John Ashman wrote:

Mine does regularly. Every time I start my playlist, I have to go to shuffle, without exception. Sure, as long as it is uninterrupted, fine. But if I do something else, then reload my queue, I have to go back to shuffle. Not that this has much to do with my idea, exactly.

Play mode (i.e. shuffle and repeat) are a zoneplayer settings, clearing the queue, adding songs etc should have no effect on it. If you're seeing otherwise please let me know as i believe it is a bug and would like to track it down. (the one exception is linking rooms, the queue that wins is also the play mode that wins).

best,
-graham

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RO53BEN Enthusiast II • 4290 replies

15 years ago



John Ashman wrote:

*Back to the subject. I called it "favorite folders" because it's NOT just playlists. It's genres, artists, *whatever*.*

Here's the thing about these buttons. They could:

- 1. Recall a favorite radio station so one press activates it.*
- 2. Recall a single playlist, genre, artist, etc for instant access.*
- 3. Recall *multiple* playlists for instant access, such combining two similar genres or your three different bands or shuffle both you and your wife's music. Your choice.*
- 4. Alternatively, for those that despise the idea so much, have "saved configurations", like saving your linkages for "Party Mode" in which 3 or 4 zones are automatically linked and, optionally, a particular playlist started.*

And it would save your preferred play mode as part of the memory.

Ah in that case, this appears to be a suggestion for some kind of macro button. This has been suggested before, so, as I've done with many others, I'll merge it with the existing thread to avoid duplication.

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shoehorn Contributor III • 27 replies

15 years ago

How about some form of macro?

I regularly find myself tuning into the same radio station in the morning.

It would be great if I could push one button and the controller could do it all for me as opposed to 4 or 5 buttons and a few scrolls!

Like

Quote



sullidav Avid Contributor I • 57 replies

15 years ago

I'd like something akin to "speed dial" buttons, programmable, so by hitting one button, rather than several buttons and wheel spins, I could immediately get say a) radio station WWOZ New Orleans, or b) two particular favorite albums, c) a particular playlist playing in random order, or d) our CD player. This might be workable using the 3 buttons on the bottom left, or with new buttons on the remote, but would I think be a very cool and valuable addition to a GREAT product. Many thanks.

Like

Quote



ogeneo Contributor III • 98 replies

15 years ago

Excellent idea! Coming from Roku devices, they had a nice feature "presets" that could be any URL, playlist, album and so on.

A nice "shortcuts" menu would be appreciated.

Like

Quote



PaulS Contributor III • 77 replies

15 years ago

shoehorn wrote:

It would be great if I could push one button and the controller could do it all for me as opposed to 4 or 5 buttons and a few scrolls!

Press the "read-my-mind" button and the controller works out exactly which songs I want to hear and at what volume and in which zones....

.... Oh

.... You mean that's not what you had in mind ?

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ccoveney Contributor III • 27 replies

14 years ago

At bedtime, i almost always switch to a particular internet radio stream, set the sleep timer to 15 mins, and add my bedroom zone, and drop my study zone.

This would be really cool if there was macro or scripting to allow me to automate this and call it "go to bed...."

Maybe the mac version supports applescripting? I'm not good at applescript tho.

Something that would be esoteric, but good for folks like me.

Like

Quote



Kenn • 1 reply

12 years ago

I would Like to be able to Record macros, name Them and have Them as icons in the opening display of my controlled. That Way i could Pick my controllere up in the morning, Press the "good morning" macro wich starts my favorits radiocannel up and creates a zone for both my Livingroom and kitchen.

Like

Quote



Ubertaffy Avid Contributor I • 1345 replies

12 years ago



and the natural 2nd step would be to have the macro be an option for the alarms, so your alarm at a set time could call the macro, setting up what the OP mentioned.

Like

Quote



micklord • 10 replies

11 years ago

Hi,



I had the idea to have a setting from the controller or controller software to choose a settable configuration of players and volume setting, such as "Party - LOUD" or "Living Room - Soft" or "Pool - Chat". The owner could design presets of his/her own that fit certain players or sets of players with a certain volume level on each player.

My 2 cents....

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dongennl • 5 replies

11 years ago

Hi,

Love my 4 zones, but what I'd really like to see added are 'house presets', a 'recipe' for a number of or all zones. A bit like alarms, but not necessarily timed, and for multiple zones.

They would be definable whole-house states, a bit like Lutron lets you pre-programme all your lights in various rooms to change on a single button, example:

- 'Home after work': 2 zones on an internet radio station that plays background lounge music, 1 zone in bathroom on a predefined playlist
- 'Sunday morning': another combination of playlists, radio stations and volumes for a number of or all zones.

Think this would also be a great feature for large installations in hotels, shops, spas, etc. that don't have time to setup/manage each zone separately.

Anyone else have similar needs?

best

👍 Like

” Quote



m0urs Lyricist II • 4 replies

10 years ago

I would like to see a feature which allows me to define linked zones together with volume and the music source (e.g. a certain radio station) as presets.

So I would be easily able to play a certain music source on my favourite players with the right volume on all speakers without defining that every time.

Just as switching on a normal radio, e.g.

Would be great to see that some time in future!

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dtohmatsu Avid Contributor I • 225 replies

10 years ago

From a post a couple of years ago.

Quote:

Originally Posted by upstatemike [View Post](#)

1) Grandma Mode (similiar to "One Touch On") The ability to configure a CR200 controller so the Home button is re-purposed to toggle a specific play list or Internet Radio Station On and Off in a specific zone. This way, no matter what state the controller or zone player were last left in, Grandma can turn on the radio using only the hard buttons and it will always work for her. Other family members can still override the default setup using the menus on the touch screen so there is no loss of functionality for everyone else... it just means Grandma can now use the system without always having to ask for help.

GRANDMA MODE ... YES!!!! AKA HUNGOVER AND CRAWLING INTO THE SHOWER MODE.

It should also allow setup for default volume and sleep timer. AKA DRUNK AND ABOUT TO PASS OUT MODE

 Like

 Quote



iLudo • 2 replies

9 years ago

I love my sonos !

Sonos controller on my computer or on iOS is great and always improving.

One feature would be really usefull : shortcuts.

For example : It would great if I could easily create one button (easily reachable) that would directly launch my favourite radio in the kitchen.

Or another that would launch this spotify playList in the living room at 60% of the volume.

Or "random music" from my library all over the house.

Even better : one of the shortcut could be activated directly on the player, without using the controller (for example, by pressing 3x the volume + button)....

I'm sure you, at Sonos, have a lot of ideas. But everything you can do to make it faster to launch music would be great !

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Cascades • 3 replies

8 years ago

Dongenni nailed exactly what I'm hoping Sonos develops. I have 24 zones in my house and audio level setting is a chore.

The analog in the lighting world would be Lutron's Homeworks QS or RadioRA system. Keypads typically have 1-4 scenes for how each light should behave. For example, our kitchen lighting Lutron keypad has "All on", "Cook", "Eat", "Relax" and "Night."

My sense is that Sonos has a ton of growth potential in the whole house automation market. Creating volume "scene buttons" will really help make Sonos attractive to system designers.

PS THANK YOU SONOS!!! I LOVE YOU!!!!

dongenni;127211 wrote:

Hi,

Love my 4 zones, but what I'd really like to see added are 'house presets', a 'recipe' for a number of or all zones. A bit like alarms, but not necessarily timed, and for multiple zones.

They would be definable whole-house states, a bit like Lutron lets you pre-programme all your lights in various rooms to change on a single button, example:

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- 'Sunday morning': another combination of playlists, radio stations and volumes for a number of or all zones.

Think this would also be a great feature for large installations in hotels, shops, spas, etc. that don't have time to setup/manage each zone separately.

Anyone else have similar needs?

best

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HiFiAtLast Trending Lyricist I • 19 replies

8 years ago

+1



Yes please Sonos. I vote strongly to have 'house presets' or a similar 'macro' function added to a future Controller update - to let me switch more easily between my different uses of my Sonos system.

I listen to many voice/spoken podcasts as I walk and work between different rooms.

Or I listen with delight to my loud music through my main speakers as I work at one particular desk.

For the rest of the time I listen in only some of my rooms to quiet background streamed radio, which doesn't impede conversations or phone calls etc..

That's three very different sets of volume + speaker on/off settings, and equalisation settings too (for the podcasts), which are a real chore to tweak backwards and forwards each time I change my 'work mode'!

Please please ...

Colin P.

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mrweb Trending Lyricist I • 12 replies

8 years ago



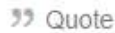
For example I could have a Preset Button named 'late night upstairs' and could get preset volume levels for every room as I always have that time. Another preset button could be 'disco' and then I would get quite high volume in every room.

And furthermore, the preset button would determine the source like Spotify or Line-In.

That would be a nice and cool feature, wouldn't it?



Like



Quote



the_lhc Avid Contributor I • 2581 replies

8 years ago



Yes but again you need to make these points at ask.Sonos.com, Sonos doesn't read these forums.



Like



Quote



JDCJ • 189 replies

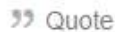
8 years ago



Yes. Currently far too many button presses to get something going right now through the controllers. Especially if you routinely go to one or two favorite playlists or stations most.



Like



Quote



the_lhc Avid Contributor I • 2581 replies

8 years ago



JDCJ;211486 wrote:

Yes. Currently far too many button presses to get something going right now through the controllers. Especially if you routinely go to one or two favorite playlists or stations most.

That's what the "Favorites" screen is for, add the most commonly used stations in there (dunno if it works for playlists, I don't use them).

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Buegie • 702 replies

8 years ago

the_lhc;211487 wrote:

That's what the "Favorites" screen is for, add the most commonly used stations in there (dunno if it works for playlists, I don't use them).

I can confirm that the "Favorites" selection also works perfectly for Playlists.

Best of Luck

👍 Like

” Quote



JDCJ • 189 replies

8 years ago



It does, and I use favorites for most everything, but it still requires pressing zone, music button, favorites, playlist selection, play now. I am not at my Sonos right now, so that is from memory, but it is still usually around 5 presses on a phone controller.

If there were some preset/favorites options from the home or music screen, it would reduce that some. Just removing the last "play now" button press would help a little. I think the other option is "info," but I never use that. It is just not a very efficient user interface, and anything that can get my music playing with fewer screen taps makes me more likely to use it more frequently.

EDIT: Actually, make that more like 7 presses (I forgot about Play All tracks and some other press).

👍 Like

” Quote



Humm Contributor II • 2 replies

7 years ago

I dream of being able to save room volume settings with a Playlist.

I wish for a way to save Volume levels anywhere other than the Alarm settings.

Please?

Thanks for listening...

David

Contains Highly Confidential AEO and Source Code Materials



Stuart_W Local Superstar · 4103 replies

5 years ago



+21

User808643 wrote:

It has been 10 years since this feature was requested. 10 years! I would actually buy more Sonos speakers if it wasn't such a pain to reconfigure everything constantly.

Seriously, this must be easy to implement??

it's hardly a pain to group/ungroup rooms. It takes seconds. In fact less than seconds.

If you're suggesting you have to re-configure because your current groups are lost then you have network issues you need to resolve as groups will remain unless un-grouped or you turn speakers off or you have network issue.

Contains Highly Confidential AEO and Source Code Materials



User808643 • 18 replies

5 years ago

Stuart_W wrote:**User808643 wrote:**

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If you're suggesting you have to re-configure because your current groups are lost then you have network issues you need to resolve as groups will remain unless un-grouped or you turn speakers off or you have network issue.

I can't agree Stuart.

So in my situation, I have a Play 5 connected to the television through via the line in. It's usually used like a Playbar (which is too big for my situation). I have a Play1 in the kitchen, and another in the bedroom.

In the morning, I have an alarm set in the bedroom to bring on the radio. I'd like to be able to have the radio playing on all speakers every morning. Sometimes I want to have the line in from the TV playing on the Play 5 as well as in the kitchen so I can hear the tv moving from room to room. The volume needs to be turned right up for the line in vs radio.

These are just a couple of scenarios, where input/speaker combo/volume need to be re-adjusted each time. It doesn't take "less than seconds" as you suggest.

This is why I want presets, available on the first screen of the App, and to be able to apply them to alarms.

Farrar Dep. Ex. 6, 7.

125. Just like the Forum thread discussed above, another Forum thread called “virtual zones and zone grouping” similarly disclosed the claimed features. As with the “macro / presets” Forum thread, this thread also took place prior to the earliest claimed effective filing date and prior to Sonos’s claimed conception date as well.

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Virtual Zones and Zone Grouping

17 years ago • 190 replies • 45404 views

27 February 2005



theboyg Avid Contributor I • 22 replies

This "link/unlink" business is really cumbersome - and not a joy to use which goes against the ease of use of the rest of the system.

Why can't I have a virtual zone - ie a zone called "Downstairs" - and I can group all my downstairs zones into this. Then I dont have to keep manually linking/unlinking multiple zones everytime.

PLEASE !

G.



ievolve Contributor III • 130 replies

Common groupings as "virtual zones"... Great Ideal

17 years ago

28 February 2005

Like

Quote



DigitalBoy Avid Contributor I • 1321 replies

15 years ago

5 June 2006

AudioX wrote:

Individual zones could be adjusted on the fly by highlighting the zone name (not the group) and pressing vol +/-.

You can already do this. You are not forced to have the same relative volume across all zones. The request from most users is **persistence**. It would be nice if, once you customized the relative volume, you save this as a virtual zone, or 'scene' so that it could be recalled in the future, complete with the saved *relative volume* - of course the master volume might be different, but the relativity between zones should not be lost.

db

Farrar Dep. Ex. 8-11.

126. And as with the "macro / presets" thread, Sonos employees participated in the thread, and were therefore aware of these ideas from the Forum threads at the time, and indeed noted that the product management team would consider those ideas. I have cited this testimony above. Mr. Lambourne similarly testified that these Forum posts were relevant to the alleged inventions and that the inventions would be responsive to the concerns identified by users therein.

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Again, I have cited this testimony above. I have excerpted relevant portions of this Forum thread below.



JeremyLaurenson Contributor III • 25 replies

17 years ago

Thats a great idea!

Like

Quote



JohnnyQuest Contributor III • 7 replies

17 years ago

I agree. Zone groups would be a good idea.

Regards, John

Like

Quote



howard Lyricist III • 18 replies

17 years ago

I agree as well.

Howard

Like

Quote



ievolve Contributor III • 130 replies

17 years ago

Common groupings as "virtual zones"... Great Idea!

Like

Quote



RO53BEN Enthusiast II • 4290 replies

16 years ago

I'm liking this idea, shouldn't be too difficult to implement in theory.



—

I am no longer active on these forums, DM me if you have a question, I'd be happy to help.

Like

Quote

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garty Contributor III • 395 replies

16 years ago

I agree - I suggested this a while back.



I work from home and I have zones I use while I'm working and a different set of zones in the evening or at weekends. It certainly would make the system even easier to use if one could select a group of zones quickly.



Majik • 6113 replies

16 years ago

Agreed.

The ease of lining/unlinking zones is also dependent on the number of zones you have. 2 or 3 zones isn't too much of an imposition, but I imagine 6 or more is quite painful.

Just imagine if you had the full 32 zones!

At the moment we have a single, pre-defined group, that being "All Zones". I would like to see this as the default, but with the ability to configure your own groups and to delete the "All zones" group (some may not want this).

This would help with people who are having trouble blasting their neighbours during 2am parties by accidentally selecting hottub/garden.

Now this brings an interesting question: should zones be allowed to be in more than one group? If this is allowed, are there any unwanted side-effects with this?

Personally I would be happy with a grouping that allowed zones to be in at most one group (and this might be the easiest to implement), but others may not.

Also, if zone groups were allowed, what "display options" would be useful for the Zones display. Off the top of my head I can see uses for:

- * Hide all zones (only show groups)
- * Sorting (by name or groups before zones)

These could be either by a user preference or by a toggle button on the zone screen.

Also, how would these be displayed on the other screens (e.g. now playing)... as groups or as individual zones? I suspect individual zones would be better, as this takes into account all circumstances of use.

Cheers,

Keith

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DigitalBoy Avid Contributor I • 1321 replies

16 years ago

I like the idea. Why not have custom zone groups (like the party zone, but user customizable)? A Zone can be in 1 or more zone groups. Further you should be able to activate a group, and then add/drop individual zones for a one-off group (which is what we have now, but no ability to persist the group).

eg 'Downstairs' might be kitchen, den, master bedroom. I select the zone group 'Downstairs' and all 3 zones are sync'd. Then I add a zone 'Patio' just like we do now and 4 zones are sync'd. If I do nothing, the 4 zone group is lost when I unlink. However, maybe I decide I want this as a new group, so save it as 'Patio and downstairs'.

I'm not sure advanced group management is necessary, as you are unlikely to have 200 groups. Even with a large setup (10+ zones) it's probable you'll only have half a dozen or so groups.

Hopefully we'll see this in 1.4 😊

db



Lord Hemming Contributor I • 1 reply

15 years ago

I have a few zones now, two of my zones are so close (open plan area of the house) I always play the same music. I would like to be able to permanently link two ZPs as a single zone.

Like

Quote



AudioX Lyricist III • 5 replies

15 years ago

I totally agree - being able to group & save zones as a preset would be very useful.

Like

Quote



DigitalBoy Avid Contributor I • 1321 replies

15 years ago

For any non-Sonos users browsing these forums, you can group zones already. That's one of the big pluses for Sonos - zone grouping and perfect synchronization between zones. What we're asking for here is the ability to save a predefined group of zones as a new virtual zone to make it easy to select in future. Currently you need to link up all the zones that you want to group each time you change the zone grouping.

There is also another thread about 'scenes' where there is some overlap. That thread is more about setting volumes etc for all the zones in a group. It might make sense to combine these 2 requests as 1. The default of course would be equal volume for all the zones in a defined group. But the ability to customize the relative volume, and save that as a virtual zone would be a plus.

db

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sinuswave Lyricist III • 5 replies

15 years ago

There does seem to be some overlap in the Virtual Zone Theory and the Scene Theory. The two would indeed appear to be reasonably synergistic making a software "super feature" if you will.

I still do not want to diminish the significance of being able to have a playlist associated with presets of volume, zone players or "virtual zones" and while we are dreaming, toss in a timer function (as discussed ad nauseum) in these forums.

Like

Quote



AudioX Lyricist III • 5 replies

15 years ago

DigitalBoy wrote:

What we're asking for here is the ability to save a predefined group of zones as a new virtual zone to make it easy to select in future....

...the ability to customize the relative volume, and save that as a virtual zone would be a plus.

It would probably work best by having an option when a zone is added to the group to **adjust volume to match group or keep existing volume level**.

When group name is selected Vol +/- operates across the board, and volumes are all relative. Zones would already have been set to the same volume if required when added to the group.

Individual zones could be adjusted on the fly by highlighting the zone name (not the group) and pressing vol +/-.

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DigitalBoy Avid Contributor I • 1321 replies


15 years ago

AudioX wrote:


Individual zones could be adjusted on the fly by highlighting the zone name (not the group) and pressing vol +/-.

You can already do this. You are not forced to have the same relative volume across all zones. The request from most users is **persistence**. It would be nice if, once you customized the relative volume, you save this as a virtual zone, or 'scene' so that it could be recalled in the future, complete with the saved *relative volume* - of course the master volume might be different, but the relativity between zones should not be lost.

db

 1 person likes this

 Like

 Quote


MarcG Contributor I • 5 replies

15 years ago

I am just re-suggesting a feature that, alas, did not make it into Version 2.0.

My suggestion is for Virtual Zones. When I first bought my Sonos I thought it could handle multiple, permanent multi-zoneplayer zones, but it can not. I have no ability to set up a zone called 'Kitchen-Deck' which consists of mu Kitchen ZP and my Deck ZP, and to ALSO have a zone called 'Living Room-Kitchen' which consists of my living room ZP and my deck ZP. Instead I have to create a temporary zone and then later unlink it and link up a new temporary zone.

I know one of the issues with this approach would be dealing with 2 zones that shared a ZP, but I believe that would be able to be dealt with by one of 2 plans.

1. If any ZP that is part of the zone you are trying to use is already 'active', you are not allowed to interrupt
2. Last one wins. This means that if Virtual Zone 1 has my kitchen in it and is playing and I choose Virtual Zone 2 which also has my kitchen in it and I hit play, that the kitchen zone will swith to playing the new choise.

Anyway, I realize there will be some things to work out, but as I add players to my house, this feature will be key to having a customized system.

Marc

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alphagetti666 Contributor III • 70 replies

15 years ago

With my my working shift work, I most certainly have to continually redefine my linked zones... one set when she's awake or not home, the other when she's trying to sleep... virtual zones would most certainly be a good thing.

In my case, I'd only need to be able to define four virtual zones.

👍 Like

” Quote



John Ashman Contributor III • 102 replies

15 years ago

As usual, I'm risking finding out that Sonos has this feature already (since this thing is like an onion), but it would be nice to be able to preset special "clusters" of zones, kind of like mini party modes, but with only several zones, not all. For instance, we're doing a 20-zone house that has at least three distinct areas that would never be together, the master suite area, the living area and the guest suite area. Plus two guest bedrooms, child's bedroom, office that could/should be totally segregated.

Or, it would be nice to completely isolate several areas, a Sonos system within a Sonos system, so that certain remotes don't see every zone, just the ones it is most likely to control.

Perhaps these could be handled in the Sonos controller software and then each remote can have a setting in the advanced settings which "cluster" it is in.

👍 Like

” Quote



Graham - Sonos Avid Contributor I • 824 replies

15 years ago

I personally like this idea... it has been suggested before with names such as 'zone scenes' or 'zone profiles'.

I think its a good idea, though can appreciate that it would be a good amount of UI work to get just right and not be confusing...

Its on the Radar for the PM guys, but not in the near term from what i know.

best,
-graham

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John Ashman Contributor III • 102 replies

15 years ago

I like "zone clusters", a brilliant name for a redundant idea if I've ever heard one 😊

👍 Like

” Quote



scottmi Contributor III • 12 replies

15 years ago

yes another great idea..! how has investigation and development of this feature progressed? Getting any closer?

👍 Like

” Quote



buzz • 18545 replies

15 years ago

scottmi,

SONOS never publishes their development plans.

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svk Contributor III • 40 replies

14 years ago

There are definitely zones that I don't "need" that I would likely add if I had the ability to group and persist them.

For example:

Bedroom Bathrooms
Hallways

In some cases I got around this by wiring, the hard way, what would have been more easily handled with additional zone players. In other cases I abandoned the thought all together.

Has anyone else put off purchasing additional zones due to the absence of "virtual zones"?

👍 Like

” Quote



Dr Tchok Avid Contributor I • 459 replies

14 years ago

No, but I think the Virtual Zone is a great idea...

👍 Like

” Quote



waveman69 Contributor III • 11 replies

14 years ago

I like the virtual zones suggestion. :rolleyes:

I want also to see a feature like give permission to control some zones from a specified control or hide "these zones" on specified controller.

Example:

My children share a zone player in the playroom with a control and can play what they want but they can also change music/volume round the house if they want or without knowing it.

Wavey

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Beejay Contributor III • 167 replies

14 years ago

Graham - Sonos;27804 wrote:

I personally like this idea... it has been suggested before with names such as 'zone scenes' or 'zone profiles'.

I think its a good idea, though can appreciate that it would be a good amount of UI work to get just right and not be confusing...

Its on the Radar for the PM guys, but not in the near term from what i know.

*best,
-graham*

Wow....this is about as much as Sonos give away on anything!

Personally I think its a great idea....the UI is simple - the same way you add zones now - you just have another option "create virtual zone", then you either display these amongst actual zones (taking the highest common denominator if any are ever selected) or (my preferred option) virtual zones is a soft key at the bottom of the zones screen. When selected, the zones screen behaves the same for virtual zones (Again on link zones or drop zones you take the highest common denominator). If you go back to the standard Zone screen, the actual zones are joined as per the virtual zone config. Easy...not confusing :D

👍 Like

” Quote



Robert Avid Contributor I • 12 replies

14 years ago

I have grown my Sonos footprint from about 4 zones to now about 20 zones. As my Sonos footprint grew I have starting wanting a couple of features that I did not need when I had a smaller set up.

First, I would like a way to save zone configurations. This would be an extension to the existing "[All Zones - Party Mode]" configuration. In an ideal world users could create additional named configurations like "Morning Radio" or "Evening Party". So for example "Morning Radio" would link all the hallway zones and the master bedroom zones and the kitchen and family room zones. Because I have outside zones that I don't want linked even with an all house party even the existing [All Zones - Party Mode] does not usually work for me.

The second feature it to make all the volumes for the selected zones be equal. Presumably this would be a new button on the volume dialog. If I link 10 or more zones it is a pain to get all the volumes to be equal. The work around is to lower, as a group, all the zones to zero then bring them all back up the desired volume but this is a hack.

Farrar Dep. Ex. 8-11.

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C. Logitech Slim Devices / Squeezebox

127. The SLIMP3 is a “network MP3 player” released no later than 2003 by Slim Devices, Inc. <https://web.archive.org/web/20110807085936/http://www.digitaltrends.com/media-streamer-reviews/slim-devices-slimp3-player-review/> (2003 review of the SLIMP3 Player). Squeezebox is a family of network music players. The original device was the SlimMP3, introduced in 2001 by Slim Devices. It had an Ethernet interface and played MP3 music files from a media server. The first Squeezebox was released two years later and was followed by several additional models. Squeezebox 1 was released in November 2003, Squeezebox 2 was released in April 2005, and Squeezebox 3 was released in November 2005. https://wiki.slimdevices.com/index.php/Hardware_comparison.html; <https://www.cnet.com/reviews/logitech-slim-devices-squeezebox-review/>; <https://www.dexigner.com/news/5754>; <https://www.engadget.com/2005-10-25-slim-devices-gives-a-facelift-to-their-squeezebox.html>; <https://www.audioholics.com/news/slim-devices-squeezebox-v3-shipping>. As discussed below in more detail, I have also reviewed source code for the Squeezebox server dated November 2005. *E.g.*, https://downloads.slimdevices.com/SlimServer_v6.2.1/. I note that there were many versions of software released by Logitech / Slim Devices prior to both the filing date, the alleged conception date, and the critical date. *See, e.g.*, <https://downloads.slimdevices.com/>. For example, version 5.4.1 of SlimServer was dated and released in March 2005. *E.g.*, https://downloads.slimdevices.com/SlimServer_v5.4.1/SlimServer_v5.4.1.ZIP.

128. I understand that each of these devices was therefore prior art under 35 U.S.C. 102(a) because they were known or used by others in this country and described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent

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(*i.e.*, before Sonos's claimed conception date of December 21, 2005). Further, I understand that each of Squeezebox 1 and 2 are prior art under 35 U.S.C. 102(b) because they were described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States (*i.e.*, more than one year prior to September 12, 2006).

129. "SLIMP3 is an MP3 player that streams your music from your computer to your stereo over your ethernet network without any loss in sound quality." LOGITECH_0014. I understand that Slim Devices was acquired by Logitech, Inc. in 2006. [https://worddisk.com/wiki/Squeezebox_\(network_music_player\)/](https://worddisk.com/wiki/Squeezebox_(network_music_player)/); LOGITECH_0004; LOGITECH_0006; LOGITECH_0014.



LOGITECH_0014.

130. In November 2003, Slim Devices released a successor product, Squeezebox. [https://worddisk.com/wiki/Squeezebox_\(network_music_player\)/](https://worddisk.com/wiki/Squeezebox_(network_music_player)/).

131. Squeezebox "streams your music from your computer to your digital stereo over your wireless or ethernet network—without any loss of sound quality." https://web.archive.org/web/20050207012626/http://www.slimdevices.com/pi_overview.html.

As described on the SlimDevices website:

The Squeezebox player is incredibly easy to set up and use. It takes just a few minutes to install: simply load SlimServer, our powerful and free Open

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Source software, onto your computer and connect the player to your network. Squeezebox automatically configures itself and is ready to use.

Squeezebox is a complete and elegant solution that takes advantage of the power and capacity of your existing computer. As a result, Squeezebox places no limit to the size of your music library.

Squeezebox's user-friendly interface allows you to browse quickly through your whole music collection via remote control or web browser. Its large, built-in fluorescent display is bright and easy to read. Thanks to its small form factor, you can place Squeezebox in your stereo cabinet, on a shelf or on your bedside table. Digital and analog RCA outputs connect Squeezebox to your home theater, stereo receiver, or amplified speakers. And when you install multiple players, they can play independently or in sync for whole-house audio.

- Stream digital music from your computer or over the Internet
- Listen to MP3, WMA, AAC, Apple Lossless, Ogg Vorbis, FLAC or uncompressed audio (WAV and AIFF)
- Browse and stream SHOUTcast Internet radio
- Place anywhere—low profile, built-in display, no TV required
- Connect to 802.11 wireless or ethernet network
- Plug into any home theater stereo or speakers with digital and analog outputs
- Synchronize multiple players for whole house audio
- Browse and search using custom infrared remote or any web browser
- Extra features—built-in alarm clock, music selection by Album Art, plugins, web interface skins and more!



Id.

132. The SlimDevices website further disclosed comparison points between Squeezebox and other solutions available at the time:

- Whole-house audio—A key benefit of a digital music collection is having ubiquitous access to the music in every room and at any time. Is the system able to stream to multiple players? Can multiple players play in sync and independently?

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Is the player small enough to be placed in every room, and is the design smart enough not to require a TV for setup and normal operation? Squeezebox is designed from the ground up for a whole-house experience with multi-player sync and remote control and its elegant low-profile design fits in every room.

- Audio Outputs—Audio outputs, in large part, determine the quality of the listening experience. All players offer analog outputs. A few players also offer digital optical connections. Squeezebox includes both digital optical and coax outputs to connect to any device with digital inputs, as well as analog RCA and headphone connectors.

...

- Remote—What happens if you lose or break the "specialty" remote that came with the player. Can you replace it with a universal remote or do you have to buy an expensive replacement? Squeezebox understands a broad range of IR signals from third-party remotes as well as IR signals from its custom designed remote. Additionally, you can control Squeezebox from your wireless PocketPC or laptop.
- Music Accessibility—Some players require that you pay extra to listen to music over the Internet. There is nothing inherently wrong with these services but does the player also offer free alternatives like SHOUTcast streaming directory? Squeezebox supports open streaming formats like Icecast and SHOUTcast.
- Obsolescence—A risk of modern technology is that companies, large and small, who make new devices, may not continue to sell or support them in the long run. Squeezebox is built around an active and creative open source community and won't ever become obsolete because the users control the software and are motivated to keep up to date.
- Server Interface—Controlling the player through the display is necessary but is it sufficient? The SlimServer software that powers Squeezebox can be controlled from any web browser and can be downloaded for free to evaluate and use.

[https://web.archive.org/web/20050207112450/http://www.slimdevices.com/pi_moreinfo.h](https://web.archive.org/web/20050207112450/http://www.slimdevices.com/pi_moreinfo.html)

[tml](#); IA at 63.

133. The Squeezebox hardware was also shown as follows on the SlimDevices website:

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https://web.archive.org/web/20050206021903/http://www.slimdevices.com/pi_specs.html; IA at 65.

134. The SlimDevices website repeatedly mentions that the Squeezebox “supports multiple synchronized players” and includes digital interfaces that “control the player and manage playlists from a web browser.”

https://web.archive.org/web/20050207011721/http://www.slimdevices.com/pi_features.html; IA at 68. Publicly available reviews from the time (e.g., March 2004) stated that the Squeezebox made “your entire music library . . . instantly available through a high-end audiophile system, anytime you want it.” <https://books.google.com/books?id=5NIDAAAAMBAJ&pg=RA1-PA34&dq#v=onepage&q&f=false>. Squeeze box is “easy to set up, . . . has 802.11b wireless connectivity built in through a flip up antenna.” *Id.* To set it up, the host computer that stores the digital music “must be running the SlimServer software from Slim Devices,” and that “software is available as a free download. Simply click on the button that says ‘Start Server’” to begin. *Id.* Next, the user should “plug the Squeezebox in, hook up the RCA cables to your stereo (there’s an

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optical digital out line . . .) and turn it on. The shockingly bright LCD screen will display prompts for selecting a wireless network to use and other setup options. You use the system's remote control with its easy-to-understand 4-button navigation to make your choices." *Id.* Reviews noted that Squeezebox had "the ability to use multiple Squeezebox units in your home. It works like this: Because they're wireless, several Squeezeboxes can exist on your network. Someone in the kitchen can listen to one stream of music using a small stereo or powered speakers, while someone in the living room listens to an entirely different stream. Alternatively, the Squeezeboxes can be synchronized so that the same stream plays throughout the house over the network." *Id.*; *see also* <https://web.archive.org/web/20060113082526/http://wiki.slimdevices.com/index.cgi?BeginnersGuide> (discussing setup and Squeezebox configurations); IA at 98.

135. Squeezebox 2, including associated SlimServer 6 software, was released no later than June 14, 2005 and followed a first-generation Squeezebox released at least a year earlier. <https://web.archive.org/web/20050726012927/http://www.globetechnology.com/servlet/story/RTGAM.20050527.gtsqueezeboxmay27/BNStory/TechReviews/>. Reviews noted that with Squeezebox, "one PC server can support up to a couple of dozen SqueezeBoxes on the same network."

136. Squeezebox 2 was advertised as offering the following advances over the original Squeezebox:

- True 802.11g networking, with support for new encryption standards and throughput up to 54Mbps
- New greyscale vacuum fluorescent display with more than twice the resolution (320x32 pixels).
- Stunning animations, transitions and visualizers, including a full screen, 64-channel, 30 frame-per-second stereo spectrum analyzer.
- Wireless bridging - plug other wired ethernet devices in to the wireless Squeezebox2, and they're on your network
- New SlimDSP™ pure software architecture for all audio format decoding and signal processing functionality.

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- Native FLAC support in the firmware; allows pure lossless CD audio transmission with reduced storage and bandwidth.
- High fidelity 24 bit Burr-Brown™ DAC
- High precision dedicated crystal clocks and separate linear power supplies for the audio stages
- Huge 64 megabit buffer for extreme resilience to adverse wireless network conditions.
- SqueezeNetwork - allows access to your favorite internet radio stations, alarms, and more without a computer being on
- Crossfading between songs
- Faster 100Mbps wired ethernet interface

Squeezebox2 features a new design for its audio output stages, which includes components and design aspects usually found only in much more expensive equipment. We listened to our audiophile customers, and carefully designed both the digital and analog output circuitry for extreme performance. We tested many power supply, DAC, and op-amp designs and selected the best configuration using measurements taken with a Dscope Series III audio analyzer. The result is an incredible level of measurable performance rivalling much more expensive equipment.

For the analog output stage, we used extensive power supply isolation and filtering, with separate dedicated linear regulators for the DAC and line-out amplification stages. The PCM1748 DAC comes from Burr-Brown™, a brand widely recognized for high quality and ultra-low distortion levels. Full 6Vpp line-out levels ensure a high signal-to-noise ratio through to the receiver, and power levels compliant with high-end gear.

The S/PDIF interface and DAC clocks are driven directly by two dedicated crystal oscillator circuits running at fixed frequencies. By contrast, other low-cost devices generally use a PLL circuit to generate multiple clock frequencies from a single crystal - this design is less expensive, but it is more susceptible to instability due to power supply noise and environmental factors. By using dedicated fixed oscillators, Squeezebox2 eliminates the predominant source of jitter and clock imprecision in S/PDIF sources.

In addition to this new hardware, Squeezebox2 uses a new signal processing architecture implemented entirely in software - we call it SlimDSP™. This means that all audio format decoding, synthesis, filtering, mixing, and attenuation operations are tuneable and upgradeable with firmware. Even all of the audio-related logic circuitry, such as the encoding of the S/PDIF output signal and the presentation of data to the DAC, are implemented in a field-upgradeable Xilinx gate array. Squeezebox2 is without a doubt the most capable, configurable, and upgradeable networked audio device ever created.

https://web.archive.org/web/20050714032953/http://www.slimdevices.com/pi_faq.html#about2-hwsync; IA at 73-85. Squeezebox 2 is also highly compatible with Squeezebox and SLIMP3

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players because “all three players can be synchronized in the same group.” *Id.*; *see also id.* (“you can have any number of Squeezeboxes on your LAN, using a single instance of the SlimServer software. Thanks to the efficient design of our software and streaming protocol, even a low-end PC can service more than a dozen Squeezeboxes. Each player operates completely independently of the others, so you can have different music playing in your garage, kitchen, bed room, living room... wherever! In addition, if you have multiple Squeezeboxes, you can synchronize them so that they play back the same audio in every room of your house.”); *see also id.* (“Can I play the same audio Squeezebox2 is playing on my computer at the same time, synchronized? Yes, this is possible through a program by Richard Titmuss named SoftSqueeze. Please note that SoftSqueeze is written in Java and requires Java 1.5 in order to synchronize, but for more information please see Richard's SoftSqueeze web site. SoftSqueeze is also now included in SlimServer. For more information on this, see the WebStart documentation.”); *see also* <https://web.archive.org/web/20050726010928/http://softsqueeze.sourceforge.net/> (“Softsqueeze supports synchronization with hardware players”); *see also id.* (“Synchronization with Squeezebox2, Squeezebox and Slimp3 (requires Java 1.5)”); <https://web.archive.org/web/20050403091101/http://softsqueeze.sourceforge.net/sync.html>; <https://web.archive.org/web/20060113080440/http://wiki.slimdevices.com/index.cgi?Synchronization> (“You can synchronize two or more music players, so that the same music is being played in multiple parts of your house.”); IA at 96; <https://web.archive.org/web/20060113082526/http://wiki.slimdevices.com/index.cgi?BeginnersGuide> (“Note that you can connect multiple Squeezeboxes to one Slimserver - one per room if you like! And then either have them all play their own thing, or synchronize any or all of them together.”); IA at 99.

137. The user manual for Squeezebox 2 also describes controlling multiple

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squeezeboxes with one SlimServer:

Controlling Multiple Squeezeboxes with One SlimServer

Any number of Squeezebox2, Squeezebox or SLIMP3 on your network can connect to a single SlimServer. Each player operates independently of the others, so you can play different music on each one. You can also synchronize them to play the same music in every room of your house simultaneously.

If you have more than one player connected to your SlimServer, a drop-down list will appear in the web interface so that you can choose which player to control.

To synchronize multiple players with the web interface:

1. In the web interface, click on Player Settings, then Audio.
2. In the Synchronize section of the page, choose the player that you'd like to synchronize. Click Change.

<http://svn.slimdevices.com/repos/slim/7.4/trunk/docs/squeezebox2/Squeezebox2-Owners-Guide.pdf> at 19.

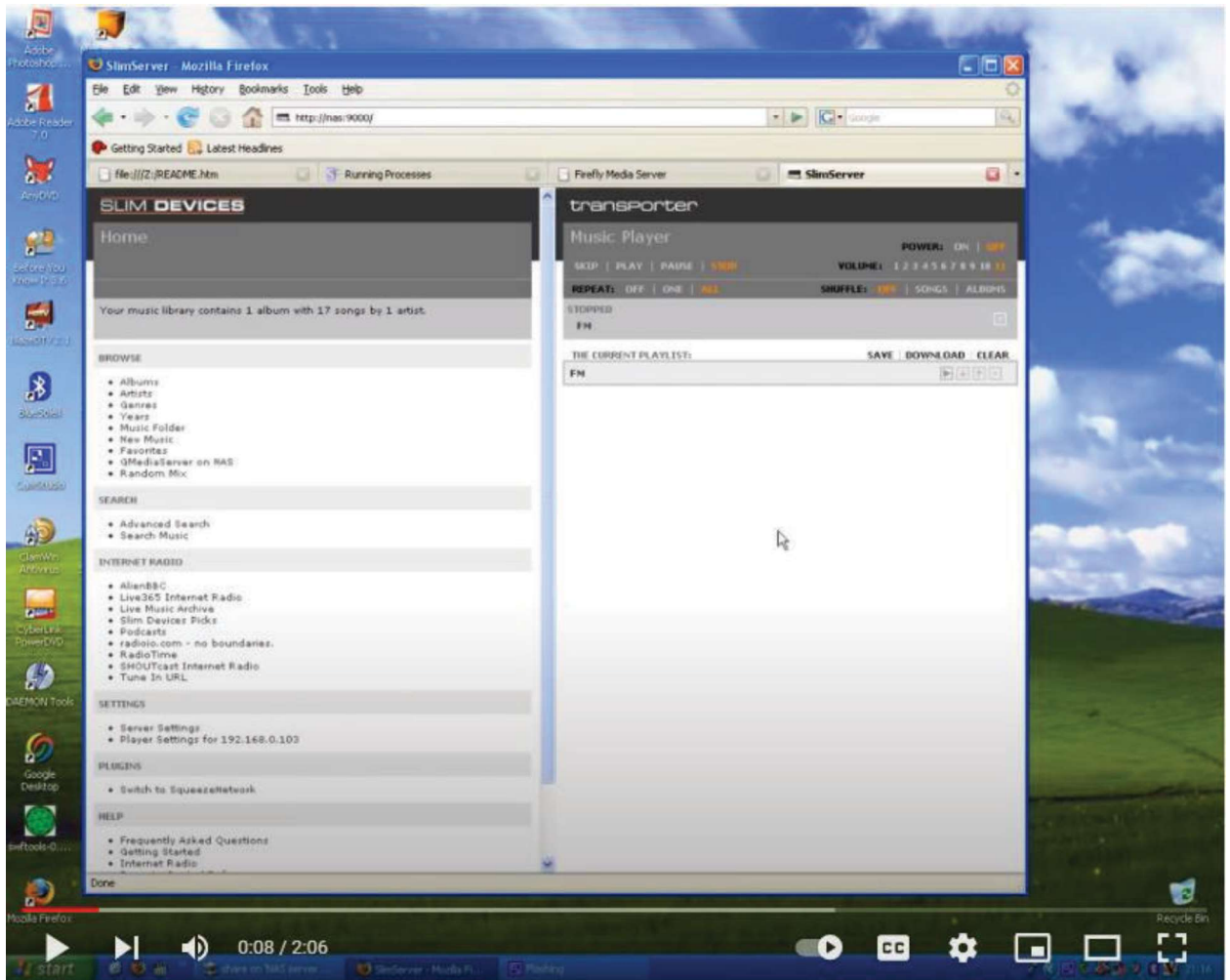
138. As another reviewer noted, “Normally each Squeezebox works independently. This means you turn each and every of them individually and you control them individually. It is perfectly natural when you have just one Squeezebox. But when you get a second one, sometimes you miss the feature of having them both “in sync”, playing exactly the same synchronized music, when moving from one room to another. Actually this is one nice feature of the Slimserver software. It enables you to group together a couple of players. Once done, the music can be controlled from each player (the other players react in sync), the only feature that works independently is volume control. And of course you can group / ungroup / regroup the players on the fly (from a Web interface or using a remote controller). . . . So instead of having a complicated and limited system, there finally is a clean architecture to handle multiroom sound systems. Instead of miles of cables there is a WiFi cloud covering the music library server (in a basement) and all players (in rooms). Rooms can be synchronized or independent, setup and especially using the system is very simple and intuitive.”).

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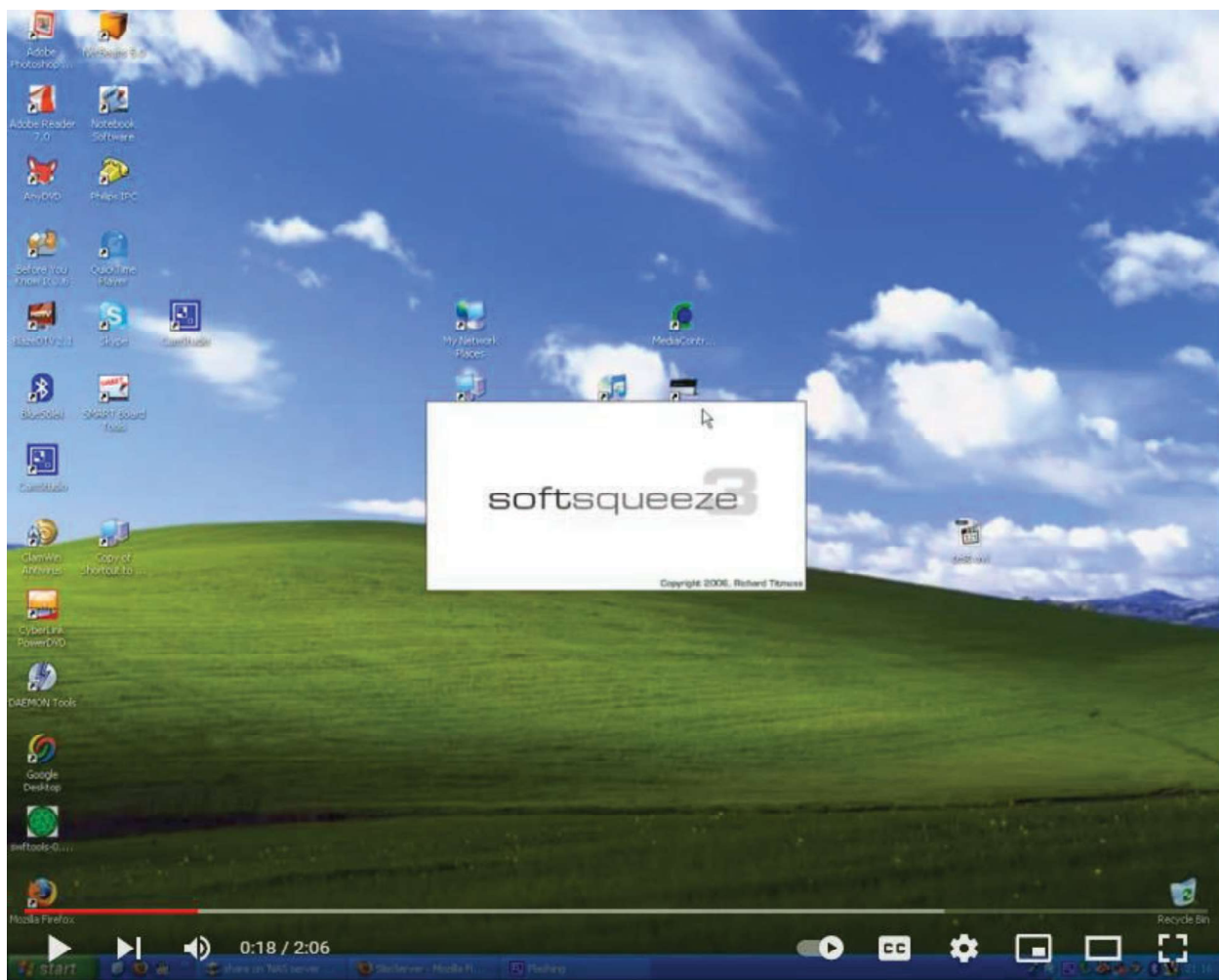


<https://web.archive.org/web/20070528122735/http://headworx.slupik.com/2007/03/multiroom-audio.html> (dated March 4, 2007).

139. The SoftSqueeze software discussed above is demonstrated in part in the following video:



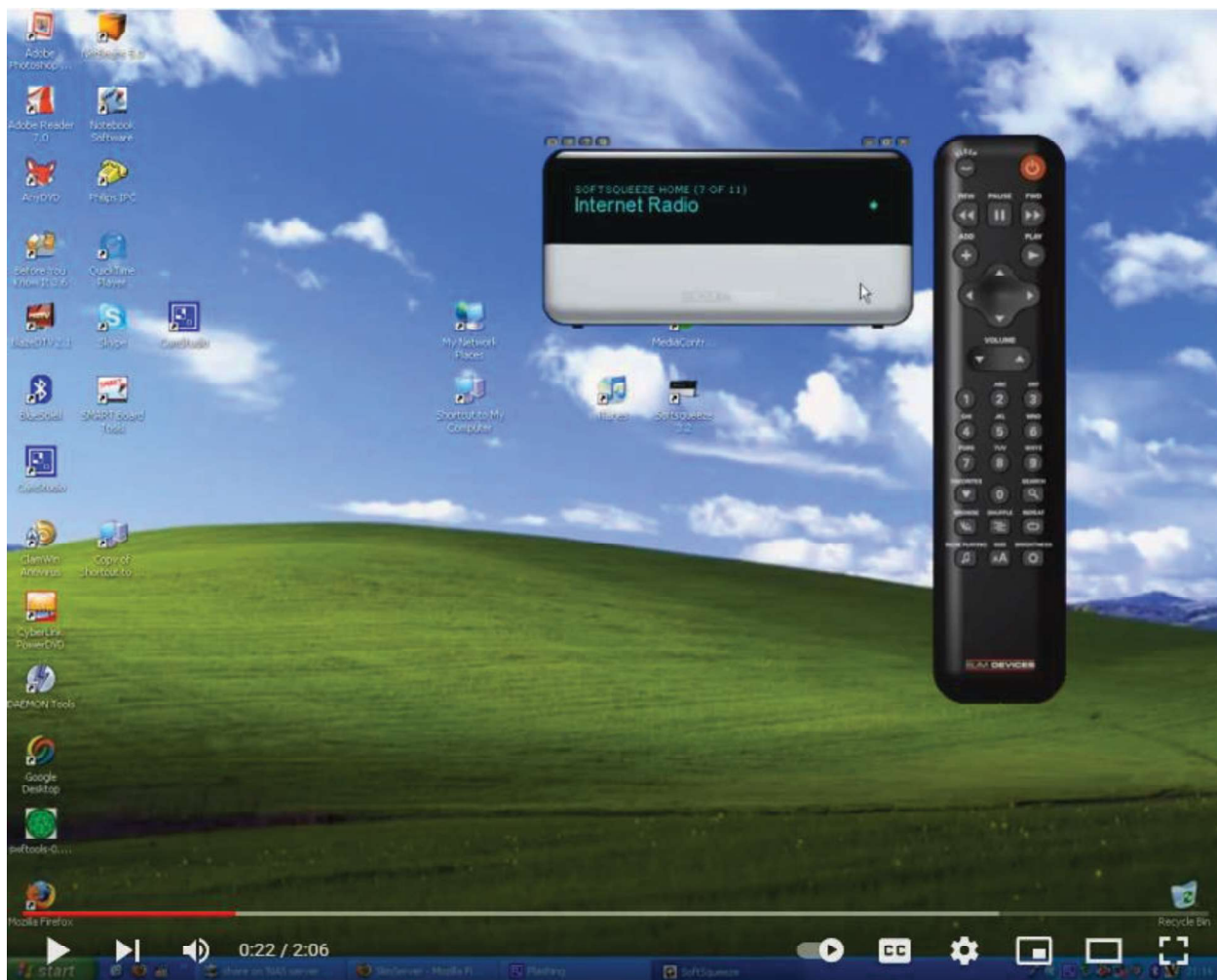
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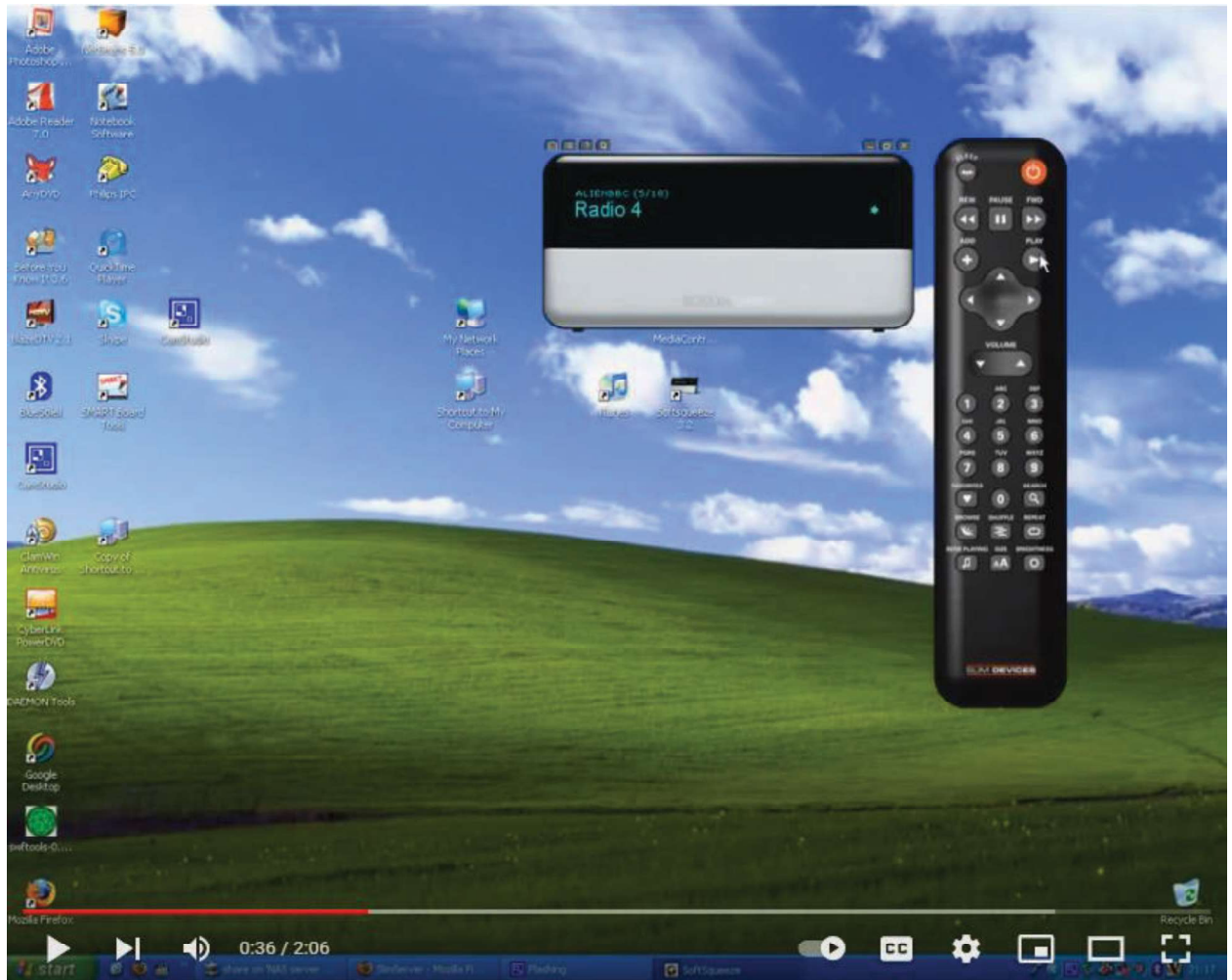


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<https://www.youtube.com/watch?v=5-IMSauUPAc>.

140. Squeezebox is demonstrated in part in the following video:

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<https://www.youtube.com/watch?v=XfExBgofXtk>.

141. I understand that Sonos reviewed the SLIMP3 product when designing its own. *See, e.g.*, SONOS-SVG2-00034518 at 52-55 (Lambourne ITC Dep. Tr.); Lambourne Dep. Tr. at 179:15-21 (in reference to competition with Squeezebox, stating that “[t]o some degree inasmuch that it was a streaming device, but I don’t think it we were looking to create something different.”).

142. I note that Slim Devices open-sourced the server software, named SliMP3 Server, underlying SLIMP3. LOGITECH_0014 (“The powerful SLIMP3 software is available as open source.”). The earlier versions of SliMP3 Server, dating back to Version 1.0 released on September 16, 2001, are listed on Slim Device’s legacy website. LOGITECH_0006. Some versions are still accessible in the Internet archive:



<https://web.archive.org/web/20040918101852/http://slimdevices.com/downloads/squeezebox.pdf>

144. I downloaded and analyzed version 5.3.1 (and the other prior art software versions) by clicking on the ZIP file shown above and accessible from SlimDevices' website <https://downloads.slimdevices.com/>. The discussion of Squeezebox in this Report relies in part on my analysis of that code, from which the operations of the client players can be discerned, as well

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as other documents such as the Squeezebox brochures discussed above, which provide consistent descriptions concerning the features and operation of the Squeezebox devices as demonstrated in the Squeezebox source code version 5.3.1. The code itself and all attendant software including Softsqueeze includes metadata identifying it as prior art, and comments within that code identify it as prior art as well.

Name	Date modified	Type	Size
firmware	10/1/2004 4:37 PM	File folder	
server	10/1/2004 4:37 PM	File folder	
Getting Started.html	10/1/2004 4:37 PM	Chrome HTML Do...	12 KB
License.txt	10/1/2004 4:37 PM	Text Document	15 KB
psapi.dll	10/1/2004 4:37 PM	Application exten...	45 KB
Release Notes.html	10/1/2004 4:37 PM	Chrome HTML Do...	151 KB
SlimServer.exe	10/1/2004 4:37 PM	Application	512 KB

Server_v5.3.1_periscripts.ZIP > SlimServer_v5.3.1 > HTML > EN > html > softsqueeze >

Name	Type	Compressed size	Password ...	Size	Ratio	Date modified
icons	File folder					10/1/2004 2:36 PM
lib	File folder					10/1/2004 2:36 PM
applet.html	Chrome HTML Document	1 KB	No	1 KB	50%	10/1/2004 2:36 PM
index.html	Chrome HTML Document	2 KB	No	6 KB	67%	10/1/2004 2:36 PM
LICENSE.txt	Text Document	7 KB	No	18 KB	63%	10/1/2004 2:36 PM
SoftSqueeze.jar	JAR File	517 KB	No	578 KB	11%	10/1/2004 2:36 PM
softsqueeze.jnlp	JNLP File	1 KB	No	2 KB	55%	10/1/2004 2:36 PM
webstart.html	Chrome HTML Document	2 KB	No	5 KB	68%	10/1/2004 2:36 PM

145. Squeezebox (and its predecessors) streams music from a computer over an Ethernet network, and allows music to be played back in any room. LOGITECH_0014 (“SLIMP3 is a

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revolutionary approach to music playback, giving you lightning-fast access to any song in your collection, from any room in your home or office, with no limit to the size of your music library! SLIMP3 is an MP3 player that streams your music from your computer to your stereo over your ethernet network without any loss in sound quality.”).



See also SlimServer for Windows\server\Slim\Player\Client.pm at 26-57.

146. A Squeezebox device may operate as part of a synchronized system or as a standalone music player. LOGITECH_0014 (“Multiple players can be synchronized or stream independently.”); *supra*. When operating in synchrony, it may be designated as a master or a slave. The master device receives a stream of audio content in chunks from a network and pushes the received chunks to the slave devices.

147. Users can operate the Squeezebox devices or SoftSqueeze software connected to the SlimServer software via either a web interface or a remote controller. For example, a user can cause two devices to synchronize with each other through either user interface. See *supra*; SlimServer for Windows\server\Slim\Player\Setup.pm at 229-252 (invocation of the sync() function by the web interface); SlimServer for Windows\server\Slim\Player\Synchronize.pm at 32-44 (invocation of the sync() function by the remote controller); LOGITECH_0014. A user can also adjust the volume of the devices. SlimServer for Windows\server\Slim\Player\Control.pm at 192-221.

148. Physical Squeezebox devices have been produced for inspection and I have

A white, cylindrical, foldable water bottle with a black cap and a black strap. The bottle is shown in its folded state, with a visible crease in the middle. The cap is black and has a small, white, rectangular button or sensor on top. A black strap is attached to the side of the bottle. The bottle is standing upright on a light-colored surface.



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GOOG-SONOSNDCA-00056782-73.

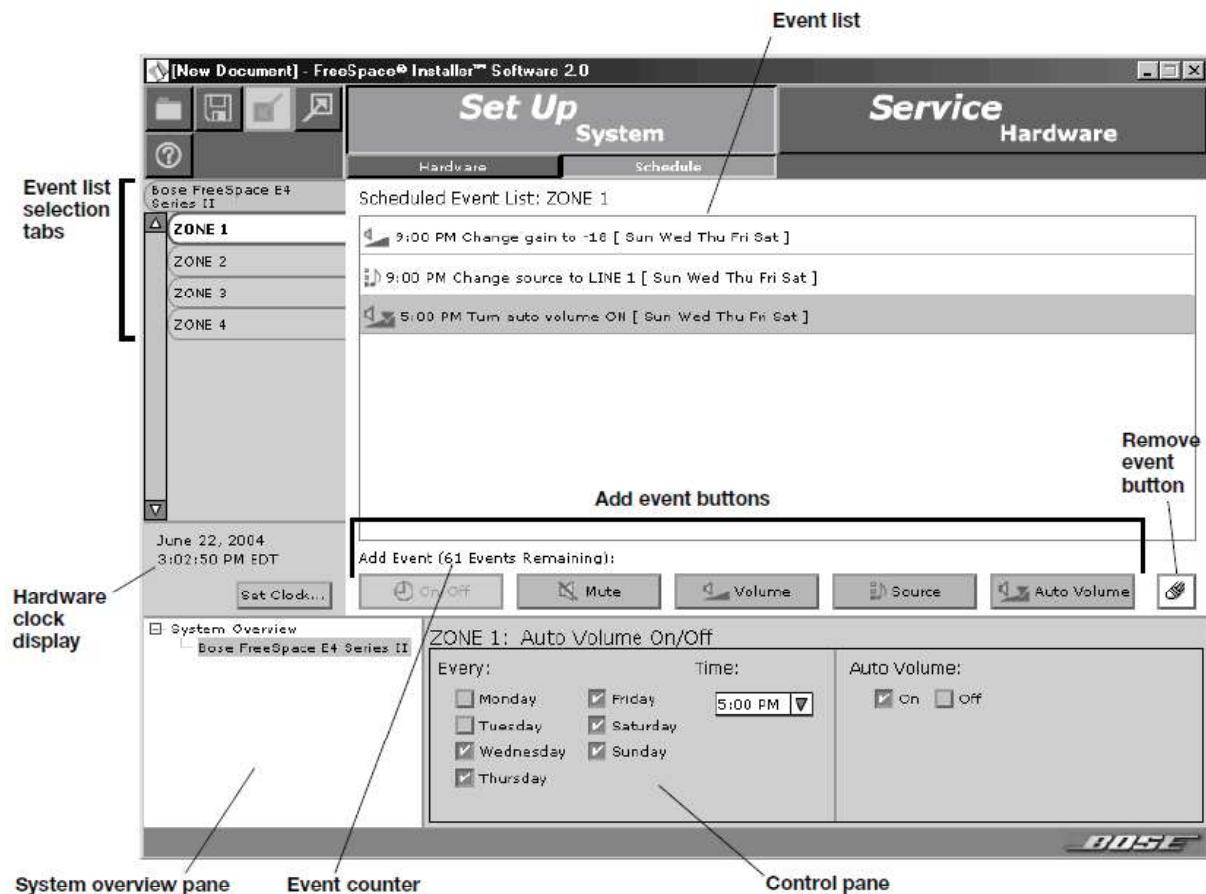
D. Bose

149. I understand that the Bose® FreeSpace® Owner’s Guide (the “FreeSpace Owner’s Guide”) bears a publication date of July 10, 2004, and was publicly available at least as of May 6, 2006, making it prior art under at least 35 U.S.C. § 102(a).

150. According to the FreeSpace Owner’s Guide publication, the FreeSpace® installer interface allowed the user to automate the system by creating scheduled events to control how

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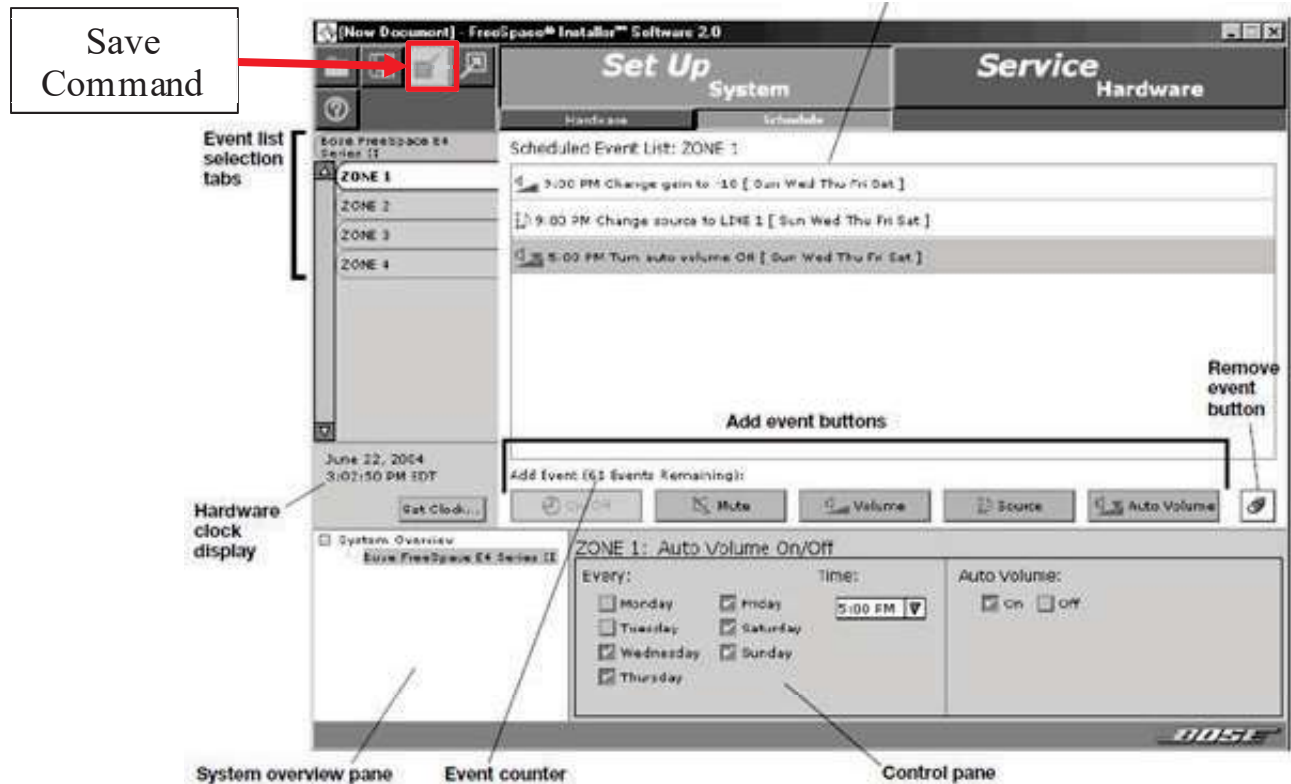
selected zones and subzones are invoked at predetermined times:



BOSE_SUB-0000056; BOSE_SUB-0000062 at -76, -100-103.

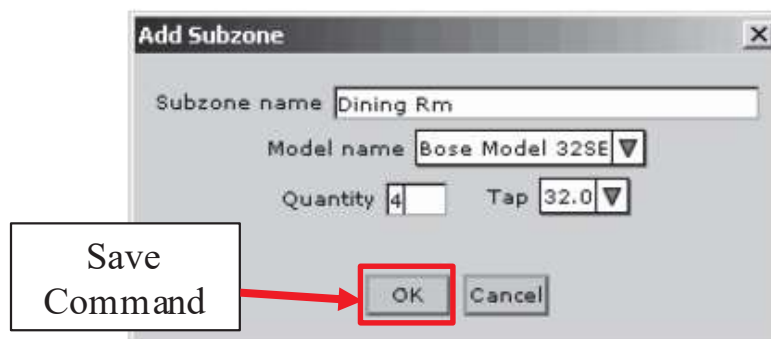
151. These events and particular subzone speaker groupings “are saved to the E4 unit” when a user clicks the save button, as shown in the following figures. BOSE_SUB-0000101.

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Id. (annotated).

152. Additionally, a user can click “OK” after creating a subzone, as shown in the following figure, to add the subzone to the table (where it can later be edited or deleted, and thus is saved). BOSE_SUB-0000108.



BOSE_SUB-0000062 (dated 2004) at -107, -108, -110.

153. The FreeSpace Guide is analogous to the '885 patent because it is in the same field

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of endeavor, “controlling or manipulating a plurality of multimedia players in a multi-zone system.” ’885 patent at 1:30-34. For example, the FreeSpace Guide, like the ’885 patent describes that the Bose “E4 system [that] has four amplifier output channels which can be configured for different zones” of speakers and manipulating the various zones of players by configuring “scheduled events” to activate playback according to particular settings at particular times. BOSE_SUB-0000074; -101; -105-107. Moreover, the FreeSpace Guide describes configuring “subzones” of speakers within each zone. *Id.*, -111-112. The FreeSpace Guide is also reasonably pertinent to the problem to be solved by the ’885 patent, “dynamic control of the audio players as a group.” For example, the FreeSpace Guide explains that a user can configure “scheduled events” that control the on/off status for a zone as well as a volume, source, and time/day of activation—or dynamic control of the groups of speakers. *Id.*

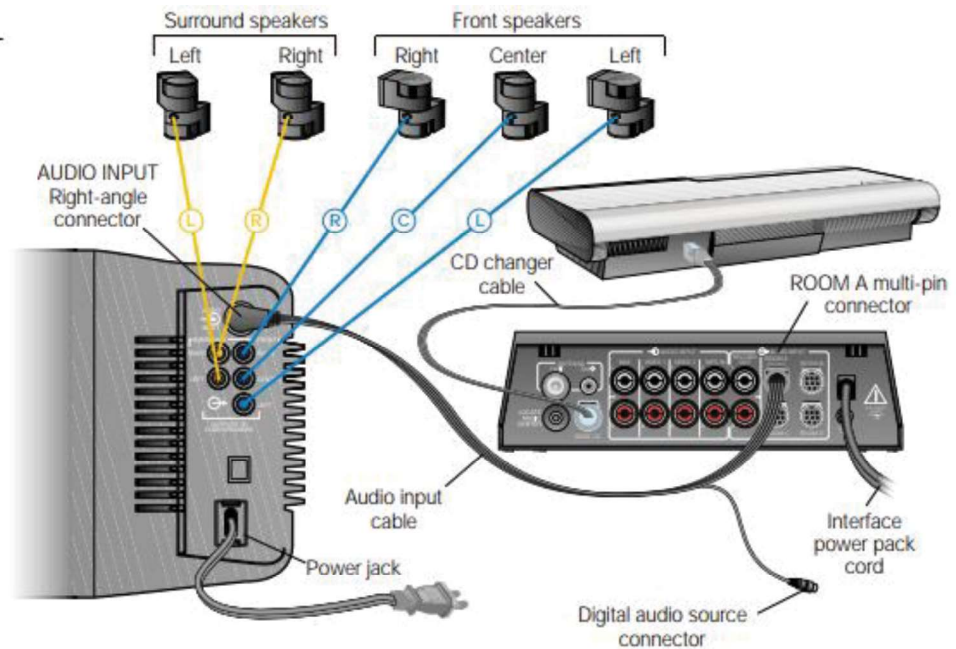
154. I understand that the Bose Lifestyle 50 System Owner’s Guide (the “Lifestyle 50 Guide”) bears a publication date of October 17, 2001, and was publicly available at least as of 2003, making it prior art under at least 35 U.S.C. § 102(a). BOSE_SUB-0000001; https://www.bose.com/en_us/support/products/bose_home_theater_support/bose_5_speaker_home_theater_support/ls50.html (noting that the Lifestyle 50 system was sold from 1970-2003); <http://www.audioreview.com/product/other/mini-systems/bose/lifestyle-50.html> (2003 reviews).

155. According to the Lifestyle Owner’s Guide, the product allowed a user to create a multi-room interface and direct digital audio to that interface:

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Figure 8

Speakers, CD changer, and multi-room interface connections



BOSE_SUB-0000012.

156. The Lifestyle system includes a touch sensitive controller interface that allows the user to wake up the system as well as selecting sources of media. Available settings include adjusting the volume, muting the system, and using a sleep timer. BOSE_SUB-0000021.

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Turning the system on

1. Touch the music center screen to wake up the display (Figure 18). The last display that you used appears on the screen.
2. Press ON/OFF to turn the system on to the last source used, or press a SOURCE button (FM, AM, CD, VIDEO 1, VIDEO 2, TAPE, AUX) to select and turn on that source (Figure 19).

Note: Initially, the AM and FM sources turn on in 2-speaker mode (front right and front left). All other sources initially turn on in 5-speaker mode. To change the speaker settings, see "Selecting the number of speakers" on page 22.

Figure 18

Waking up the display

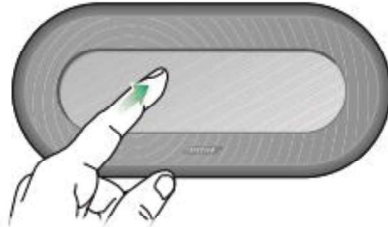
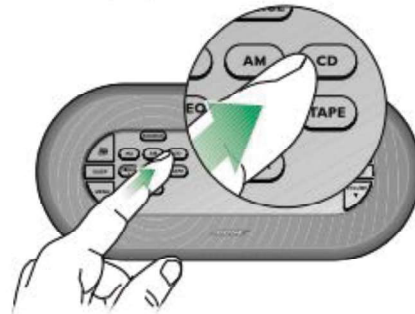


Figure 19

Turning on a source



BOSE SUB-000020.

Using the Personal™ music center display

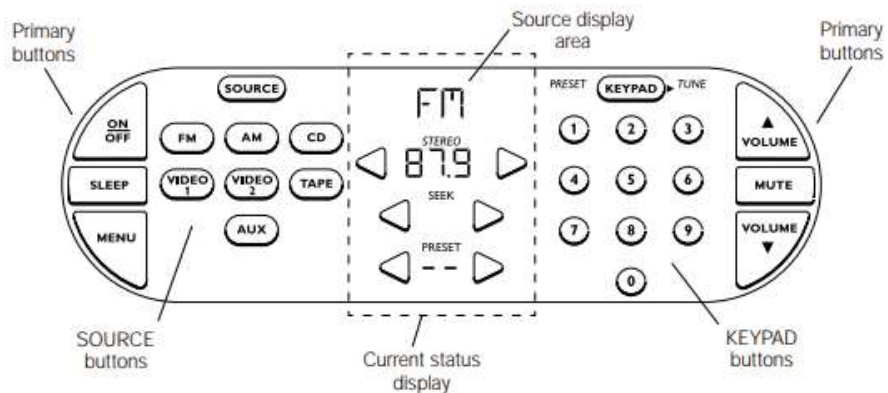
The music center display provides information on the system functions. The display offers different combinations of buttons to provide control of the function you are using. Sometimes an item on the display will flash to provide information about a system function. When an item flashes faster, it is alerting you to a needed action.

Using the primary buttons

The primary buttons (ON/OFF, SLEEP, MENU, VOLUME, and MUTE) are located at the left and right sides of the display.

Figure 21

The display showing the primary buttons, SOURCE buttons, and KEYPAD buttons



BOSE_SUB-0000022.

157. The system also includes presets, as shown below:

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PRESETS

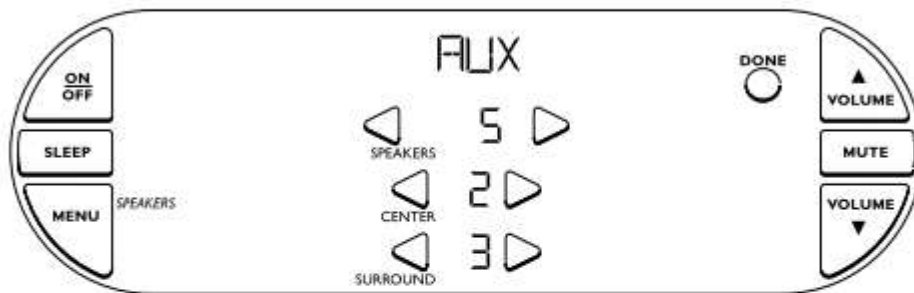
You can preset a maximum of 25 FM and 25 AM radio stations. In addition to using the *PRESETS* menu, you can set presets directly from the *KEYPAD* buttons. See pages 27-28.

BOSE_SUB-0000023.

158. The system also allows the user to select the number of speakers to control together as a group, such as 5 speakers or two speakers. “Speaker settings are remembered for source and room,” and those settings can include volume levels as well as center and surround sound settings:

Selecting the number of speakers

Initially, the AM and FM sources turn on in 2-speaker mode (front right and front left). All other sources initially turn on in 5-speaker mode. To change the speakers setting, press the *MENU* button until *SPEAKERS* is displayed (Figure 23). Use the ◀ or ▶ arrow buttons to change speaker mode from 5 to 3 or 2. Speaker settings are remembered for source and room.



Adjusting center and surround levels

The *SPEAKERS* selection display (Figure 23) also allows you to adjust the volume levels of the center and surround speakers. At the factory, these levels are set to zero. To adjust them, press the *MENU* button until *SPEAKERS* is displayed. Then use the ◀ or ▶ arrow buttons to adjust the levels.

- The *CENTER* level can be adjusted to soften or emphasize center speaker image.
- The *SURROUND* level can be adjusted to move the surround information forward in the room or further to the rear.

The system remembers the center and surround level settings for the room in which they were adjusted.

BOSE_SUB-0000024.

159. The Lifestyle system allows a user to output audio to at least four different “rooms” as shown below, which are identified as Room A, B, C, and D:

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Connecting additional rooms

Follow the placement guidelines for the Bose® powered speakers that you plan to connect. Then review your plan for how to connect these speakers to the multi-room interface in your primary room. If you have questions or need extension cables to complete the connections, call Bose Customer Service at the numbers listed on the back inside cover of this owner's guide.



CAUTION: Make sure all components are unplugged from the power outlet before you begin hooking up additional speakers.

Connect the audio input cable from your additional powered speakers to the selected ROOM jack on the back of the multi-room interface.

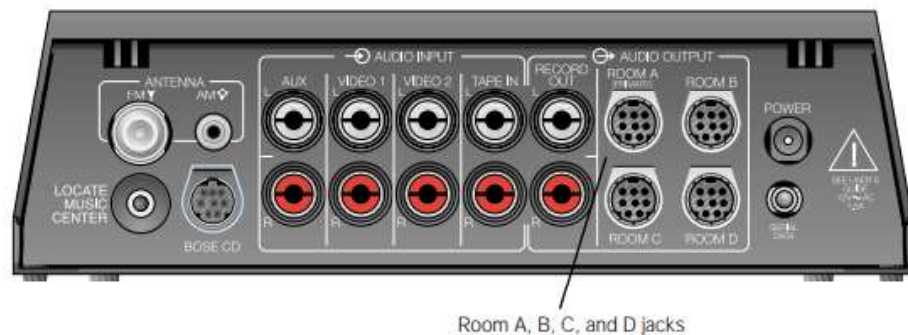
1. Plug the small black multi-pin connector (flat side facing up) into the jack marked ROOM B, C, or D on the back of the interface.
2. Follow the instructions that came with your speakers for connecting the cable to the speakers.



Note: Be sure that each connector is inserted completely into each jack.

Figure 47

ROOM jacks on the multi-room interface



BOSE_SUB-0000042.

160. The Lifestyle system describes controlling music among the four rooms, and the entire house, below. It allows controlling audio sources for up to four rooms. The Room button lets a user control a single room or two or more rooms sharing an audio source. The House button controls all of the connected rooms as one. The manual notes that an unboxed room shows that the room is sharing a source with the primary room, and any change of the audio playing will affect all rooms sharing the source.

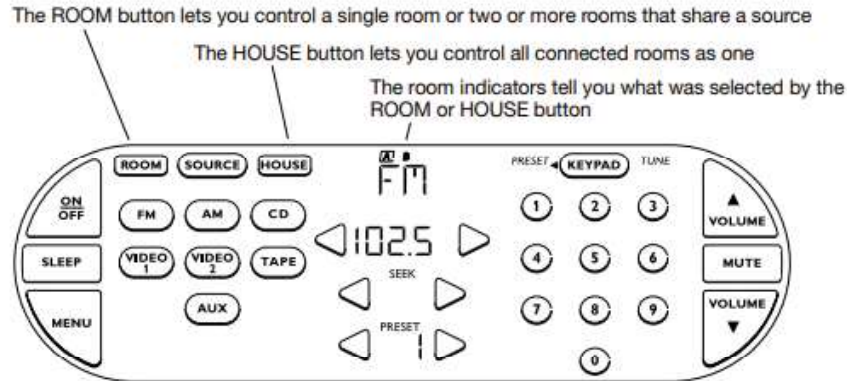
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Operating in more than one room

Your Lifestyle® 50 system can control up to four sets of Bose® powered speakers, allowing your family to enjoy different audio sources (CD, radio, TV, etc.) in up to four rooms. These rooms are referred to as room A, B, C, and D, with room A being the primary room (the one used for a one-room system). If two or more rooms are connected to your system, the Personal™ music center displays ROOM and HOUSE buttons, and room indicators (A, B, C, and/or D). Figure 48 shows an example display for a two-room system.

Figure 48

Example display for a two-room system

**Understanding the room indicators**

- A** A boxed letter indicates the presently-selected room or rooms. The selected room is affected by any source changes, or any change you make using the VOLUME, MUTE, ON/OFF, or SLEEP buttons.
- B** An unboxed letter indicates a room listening to a **shared source**. A shared source is one that is playing in the controlled room as well as in up to three additional rooms. If you change the radio station, CD track, etc., of the shared source, the change affects all rooms sharing this source. However, you cannot change sources for all affected rooms at the same time. The VOLUME, MUTE, ON/OFF, and SLEEP buttons only affect the boxed room(s).
- An empty box appears for each connected room when you press the HOUSE button. When you change the volume in the HOUSE mode, the numerical level appearing on the display does not represent the actual volume level in all connected rooms. It only represents the actual volume in rooms represented by a boxed letter.

BOSE_SUB-0000043.

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Using the ROOM button

The ROOM button allows you to select any connected room and control any sound source you want to hear in that room. Each time you press the ROOM button you can transfer control from one room to the next in A-B-C-D order. The room indicators on the display tell you what is currently selected. Rooms listening to a shared source can be linked and controlled as one room.

Turning on different sources in more than one room

Let's say you have a two-room system (rooms A and B) and the entire system is off. To turn on a different source in each room:

1. Wake up the Personal™ music center.
2. Press the ROOM button until the room indicator **A** is displayed. Press a source button, such as VIDEO 1, to turn on the system and listen to your DVD player in room A. Adjust the volume to the desired level.
3. Press the ROOM button again. The room indicator **B** is displayed. Press a different source button, such as CD, to listen to a CD in room B. Again, adjust the volume to the desired level.
4. Press the ROOM button again and notice that the room indicator **A** is displayed. You are controlling room A once again and the displays indicates that the VIDEO 1 source is on.


BOSE_SUB-0000044.

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Setting up a shared source

Now, let's say the system is already on and you want to play the FM radio in rooms A and B:

1. Wake up the Personal music center.
2. Press the ROOM button until the room indicator **[A]** is displayed. Press the FM source button and adjust the volume to the desired level for room A.
3. Press the ROOM button again to select room **[B]**. Press the FM source button and adjust the volume to the desired level for room B. Now, the indicators **A [B]** are displayed.
4. Press the ROOM button again. The indicators **[A] [B]** appear on the display indicating that you can control these two rooms together. Any button command given now (SOURCE, VOLUME, MUTE, ON/OFF, SLEEP) is applied to both rooms.

 **Note:** Remember that there are limits to using different sources in different rooms. With one tuner, the system cannot play one radio station in one room and another radio station in another. Similarly, with one CD changer, the system cannot play two different CDs at the same time.

Linking rooms for common control

There are two ways to link rooms in order to control them as one.

- Set up a shared source in two or more rooms and select them together using the ROOM button. See "Setting up a shared source" above.
- Link all connected rooms using the HOUSE button. See "Using the HOUSE button" on page 43.

Returning to single-room control

After you have gained control of multiple rooms using the ROOM button, you can use the ROOM button again to gain control of a single room. Press ROOM until the room you want is displayed (**[A]**, **[B]**, **[C]**, or **[D]**). Control that room as desired.


Id.

161. In House mode, the users presses the House button before each command to apply that command to all rooms, as described below:

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Using the *HOUSE* button

Using the *HOUSE* button, you can link all rooms together and control them as one. When you press the *HOUSE* button, an empty box indicator is displayed for each connected room. Any button pressed after that (any source button, *VOLUME*, *MUTE*, or *SLEEP*) affects every room. When you are done listening you can press *OFF* to turn off the entire system.

 **Note:** *If you do not press any additional buttons after pressing *HOUSE*, pressing *HOUSE* again cancels *HOUSE* mode.*

Press the *HOUSE* button before each command to apply that command to all rooms:

Press ...	To do this ...
<i>HOUSE</i> then a source	Play the selected source in all connected rooms.
<i>HOUSE</i> then <i>VOLUME</i> ▲▼	Adjust the volume up or down by the same amount in all rooms that are on, or all connected rooms if they are all off. The system remembers the differences among the original room volume settings.
<i>HOUSE</i> then <i>MUTE</i>	Silence all connected rooms that are on, even if any were previously muted individually. To cancel this command, press <i>HOUSE</i> then <i>MUTE</i> again. Any rooms that were muted before this command was given stay silent until individually unmuted. If you unmute an individual room after it was muted by a <i>HOUSE</i> - <i>MUTE</i> command, the other rooms remain silent until each one is unmuted individually. Pressing <i>HOUSE</i> then <i>VOLUME</i> ▲ unmutes all muted rooms.
<i>HOUSE</i> then <i>SLEEP</i>	Set the <i>SLEEP</i> timer for all rooms that are on. The <i>SLEEP</i> time selected applies to all rooms that are on even if they are playing different sources. If the <i>SLEEP</i> timer was already set in one or more rooms, the display shows the longest time already set. You can accept this time or change it for all the rooms. To cancel the <i>HOUSE</i> - <i>SLEEP</i> command, press <i>HOUSE</i> , <i>SLEEP</i> , <i>CLEAR</i> , and then <i>DONE</i> .
<i>HOUSE</i> then <i>OFF</i>	Turn off the entire system.

 **Note:** *Instead of setting the whole house to one sleep time, you can set different sleep times for individual rooms by using the *ROOM* button to select each room and setting *SLEEP*. When two or more rooms are linked, adjusting the *SLEEP* time affects all linked rooms (indicated by boxed letters).*

BOSE_SUB-0000045.

162. The Lifestyle system can also be expanded by using more than one personal music center:

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Using more than one Personal™ music center

If you have a multi-room system, you can add additional music centers for some or all of the connected rooms. Each multi-room interface can be controlled by a maximum of four music centers. Each music center can control up to four rooms.

To add a new music center to your system, follow the setup instructions on page 17. Be sure to install the batteries and turn it on for the first time close to the multi-room interface to allow the new music center to set up a radio frequency link with your system. If the multi-room interface is not plugged in or the music center is out of range, the display indicates *NO RESPONSE*.

Id.

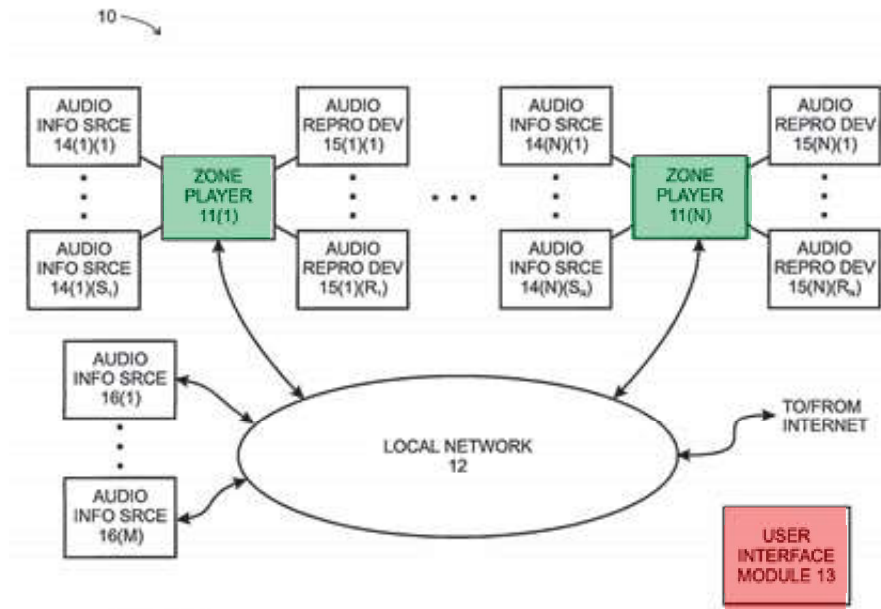
163. The Lifestyle 50 system is analogous to the '885 patent because it is in the same field of endeavor, “controlling or manipulating a plurality of multimedia players in a multi-zone system.” '885 Patent, at 1:32-35. For example, the Lifestyle 50 system, like the '885 patent describes using different rooms or zones, as well as grouping all zones in the house together, for individual or group synchronous playback. The Lifestyle 50 system is also reasonably pertinent to the problem to be solved by the '885 patent, “dynamic control of the audio players as a group.”

E. Millington

164. I understand that Canadian Patent No. 2 533 852 (“Millington”) was published on February 10, 2005 making it prior art under at least 35 U.S.C. § 102(b).

165. Millington describes a networked audio system for synchronizing playback by one or more synchrony groups. Millington, Abstract; Fig. 1, 3, ¶2; 4, ¶1. Each synchrony group includes one or more zone players that play the same audio program synchronously. *Id.*, 6, ¶3. The networked audio system includes a user interface module for the user to dynamically establish and modify different synchrony groups. *Id.*, 7. The user interface module includes a display of status information, such as the name of the audio track currently being played, the names of upcoming tracks, the identifier of the zone player currently operating as the master device, and the identifiers of the zone players currently operating as slave devices. *Id.*, 11, ¶3.

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**FIG. 1**

Millington, Fig. 1 (annotated).

166. A user can use the user interface module to enable a zone player that is currently not a member of a synchrony group to join a synchrony group, after which it will play the audio program being played by that synchrony group. *Id.*, 7, ¶3. A user can further use the user interface module to enable a zone player associated with a synchrony group to disengage from that synchrony group and join another synchrony group. *Id.*, 8, ¶2. A user can also use the user interface module 13 to control other aspects of the networked audio system, such as the audio information source and the volume of the audio playback. *Id.*, 9, ¶2.

167. Millington is analogous to the '885 patent because it is in the same field of endeavor, “controlling or manipulating a plurality of multimedia players in a multi-zone system.” '885 Patent, 1:30-34. For example, Millington, like the '885 patent explains that it is directed to the “synchronizing of audio playback as among two or more audio playback devices that receive audio information from a common source, or channel.” Millington, 1, ¶1. Millington is also reasonably pertinent to the problem to be solved by the '885 patent, “dynamic control of the audio

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players as a group.” For example, Millington explains that its disclosures allow a user to configure “synchrony groups” such that “[u]sers can enable them to be established and modified dynamically.” Millington at 7.

F. Lambourne

168. I understand that U.S. Patent No. 7,571,014 to Lambourne *et al.* (“Lambourne”) issued on August 4, 2009, and was filed on June 5, 2004, making it prior art under at least 35 U.S.C. § 102(e).

169. Lambourne discloses a plurality of speakers. Lambourne, 1:34-49 (“Currently, one of the systems that can meet part of such demand is a conventional multi-zone audio system that usually includes a number of audio players to a group.”); *id.*, 2:52-63 (“According to one embodiment, the present invention is directed to a method for controlling a plurality of players, the method comprising: displaying on a screen a first list showing at least available players, selecting at least one of the players as a zone group head, displaying on the screen a second list showing at least some of the players that are eligible to be grouped with the zone group head, selecting one or more players from the at least some of the players to be a group being formed by the group head, and synchronizing all players in the group.”). Sonos has taken the position that the following portion of the specification discloses speakers with overlapping speaker group membership. *Id.*, 1:50-65 (“The same person may wish to listen in the den and the living room to music from a compact disc in the evening. In order to satisfy such requirements, two groups of audio players must be established. In the morning, the audio players in the bedroom, the bathroom and the den need to be grouped for the broadcast news. In the evening, the audio players in the den and the living room are grouped for the music. Over the weekend, the audio players in the den, the living room, and a kitchen are grouped for party music. Because the morning group, the evening group and the weekend group contain the den, it can be difficult for the traditional system to

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accommodate the requirement of dynamically managing the ad hoc creation and deletion of groups.”); Sonos MSJ Reply (Dkt. 273-4) at 3, 10, 11. Sonos also argues that the same or similar disclosures adequately disclosed standalone mode and “transitioning” speakers from one group to another where they may be “invoked” later. *See id.* at 7-12; *e.g. id.* at 11-12 (“Third, the ’885 Patent discloses that a ‘zone scene’ is a group of ‘zone players’ that is ‘predefined’ and ‘saved’ for future use during a ‘setup’ phase, but is not activated for synchronous playback at that time. *Supra* II.B.i; ’885 Pat., 8:45-51, 10:4-19, 10:36-52, 11:12-19; D.I. 249-11, 1-2, 9-16; Ex. R, ¶55. Rather, the predefined group of “zone players” initially exists in an inactive state, which is what the ’885 Patent explains when distinguishing a “zone scene” from an ad-hoc group that is automatically activated at the time it is formed rather than being predefined and saved for future use. *Id.* In this respect, the ’885 Patent discloses that, unlike for an ad-hoc group, the act of adding ‘zone players’ to a ‘zone scene’ does not cause those ‘zone players’ to become linked together for synchronous playback at that time. Ex. R, ¶53. This conveys to a POSITA that a ‘zone player’ operating in ‘standalone mode’ prior to being added to each new ‘zone scene’ will continue to operate in ‘standalone mode’ after being added to each new ‘zone scene.’ *Id.*”).

G. Nourse

170. U.S. Patent No. 7,197,148 to Nourse *et al.* (“Nourse”) issued on March 27, 2009, and was filed on September 9, 2002, making it prior art under at least 35 U.S.C. § 102(e).

171. Nourse discloses a plurality of speakers, each of which has “a unique 16-bit address.” Nourse, 3:57-58. Each of the speakers also can be assigned up to four group identifiers.” *Id.*, 3:58-59. Group identifier “allows specific speakers to be assigned to a group and receive the same signal.” *Id.*, 3:61-63. Thus, any speaker “can be assigned to more than one group.” *Id.*, 4:5.

172. Nourse is analogous to the ’885 patent because it is in the same field of endeavor, “controlling or manipulating a plurality of multimedia players in a multi-zone system.” ’885

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Patent, 1:30-34. For example, Nourse, like the '885 patent explains that it is directed to a “a centralized speaker system that allows multiple speakers connected to a central amplifier speaker line to be monitored and controlled from a central location via a master/slave protocol.” Nourse, Abstract. Nourse is also reasonably pertinent to the problem to be solved by the '885 patent, “dynamic control of the audio players as a group.” For example, Nourse explains that speakers may be “addressed individually or as part of a group” by “receiving unique content specific, respectively, to the individual remote speaker address and group address” (*id.* 2:35-39) where the group address or identifier “allows specific speakers to be assigned to a group and receive the same signal” and play back audio as a group (*id.*, 3:61-63).

173. Nourse teaches additional means for improving the user experience by allowing a user to add a playback device to multiple groups. Nourse, 3:57-4:5. It would have been desirable to allow a user to have a particular zone player join multiple groups (*e.g.*, the kitchen and patio could be grouped for outside entertainment, and the kitchen and living room could be grouped for inside entertainment). Having a speaker join multiple groups would increase the number of customized combinations a user could configure in their home, as the Sonos Webpage recognizes as an important feature.

IX. CLAIM CONSTRUCTION

174. I understand that Sonos’s lawsuit against Google was initially filed in the Western District of Texas, and then transferred to this Court in California. I further understand that prior to transfer, the Texas court construed the following terms for the '885 patent:

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Claim Term	Court's Construction (WDTX)
“multimedia” [’885 patent]	Plain and ordinary meaning
“network interface” [’885 patent]	Plain and ordinary meaning
“playback device” / “zone player” [’885 patent]	Plain and ordinary meaning “Zone player” means “playback device”
“zone scene” [’885 patent]	“a previously-saved group of zone players according to a common theme”
“[first / second] zone scene comprising a [first / second] predefined grouping of zone players including at least the first zone player and a [second / third] zone player that are to be configured for synchronous playback of media when the [first / second] zone scene is invoked” [’885 patent]	See “zone scene”; Plain and ordinary meaning
“local area network” [’885 patent]	Plain and ordinary meaning
“cloud” [’885 patent]	Plain and ordinary meaning
“a media particular playback system” [’885 patent]	Indefinite

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Claim Term	Court's Construction (WDTX)
“data network” [’885 patent]	Plain and ordinary meaning
“remote playback queue” [’885 patent]	Plain and ordinary meaning

175. I have applied these constructions in my analysis below. For terms that are not specifically addressed by the parties or Court, I have applied the plain and ordinary meaning as understood by a POSITA. I have also addressed certain positions Sonos has taken for purposes of infringement, which appear to be inconsistent with the plain meaning.

176. I note that for the “network interface” term, Sonos identified in the joint claim construction statement that it construed the term to mean “a physical component of a device that provides an interconnection with a data network.” For the “data network” term, Sonos offered the construction “a medium that interconnects devices, enabling them to send digital data packets to and receive digital data packets from each other.” Sonos did not brief either term, and I am not aware of an order modifying the claims from the order discussed above. Regardless, as explained below, the prior art systems identified in the invalidity grounds disclose these terms under plain meaning or Sonos’s proposed constructions because the prior art references and systems discuss digital networked speakers.

X. INVALIDITY BASED ON ANTICIPATION AND OBVIOUSNESS

177. It is my opinion that Claim 1 of the ’885 patent is anticipated and/or rendered obvious by the prior art as explained in detail below.

178. Before discussing the particular mapping of prior art references to the claim limitations, I first discuss certain claim construction issues that pertain to each of the invalidity

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grounds.

179. First, I note that Sonos has proposed the following construction for the term “zone scene”: “a previously-saved grouping of zone players that are to be configured for synchronous playback of media when the zone scene is invoked.” *See* Dkt. 273-4 at 1. Google’s proposed construction for the term is “a previously-saved group of zone players according to a common theme.” Under Google’s proposed construction, more than simply naming and saving the group is required, because as the patent explains, the “common theme” is different from those two attributes. Sonos argues that under Google’s proposed construction, “a ‘grouping of zone players’ that has been ‘previously saved’ with a *thematic name* reflecting a ‘common theme’ of the group—such as “Morning”—clearly meets Google’s construction.” *Id.* at 1-2. In other words, Sonos argues that under its own proposed construction, a group merely needs to have been saved and execute synchronous playback, and under Google’s proposed construction the group merely needs to have been saved and be named. Each of the prior art grounds discussed below discloses “zone scene” under Sonos’s interpretation of both its own proposed construction and Google’s proposed construction, because in each instance synchronous group playback, speaker and group naming, and group saving is disclosed. Further, the references at times disclose particular attributes that are attributed to a group similar or identical to those disclosed in the patent as zone scene attributes, such as equalization.

180. Second, with respect to the “indication” term, Sonos has taken the position that “there is no requirement that each claimed ‘indication’ include identifiers of the added ‘zone players.’” *Id.* at 7; *see also id.* (“the ‘indication’ must be an ‘indication that the first zone player has been added to [a given] zone scene’ – nothing more is required by the ‘indication.’”). Each of the prior art grounds below discloses “indication” under Sonos’s construction of this term, which does not require the indication to identify the zone players within the group.

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181. Third, with respect to the term “standalone,” Sonos has taken the position that “[a] ‘zone player’ can be in ‘standalone mode’ whether or not the ‘zone player’ is engaging in *active* playback.” *Id.* at 11 n. 8 (emphasis in original); *id.* at 8 (“In this respect, each “zone player” will be operating in one of two states at any given time: (i) a first state in which the “zone player” is not actively grouped with any other “zone player” but rather is configured to play back audio individually (i.e., a non-grouped or standalone mode) or (ii) a second state in which the “zone player” is actively grouped with one or more other “zone players” such that it is configured to synchronize audio playback as part of that group (i.e., a grouped mode).”). In other words, under Sonos’s proposed constructions, a speaker is in standalone mode if it has not been joined to any group, regardless of whether it is active or not active. Each of the prior art grounds discloses standalone mode speakers under Sonos’s proposed construction.

A. Claim 1 Is Obvious Based On Prior Art Sonos Products (“Sonos System”)

182. The Sonos System was publicly available, on sale, offered for sale, and described in printed publications both before the critical date (*i.e.*, prior to September 12, 2005), before the alleged conception date (*i.e.*, prior to December 21, 2005), and prior to the patent filing date on September 12, 2006. The features offered in that system were substantially the same during each of those time frames, as discussed below.

183. The capabilities and features of the Sonos System are apparent from source code that Sonos has made available for inspection, the products themselves, technical documentation that Sonos has made available, public documentation regarding that system, professional and customer reviews, and other sources discussed below.

184. In my opinion, Claim 1 is rendered obvious based on the Sonos System in view of the general knowledge of a POSITA, the Sonos Forums, Nourse, and Millington, as described below. Below, I analyze each limitation of Claim 1 and demonstrate why that claim is invalid.

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(i) *Limitation 1 (preamble): “A first zone player comprising:”*

185. To the extent the preamble is limiting, the Sonos System discloses the preamble in my opinion. For example, Sonos’s User Guide for the “Sonos Digital Music System” (*i.e.*, the Sonos System) is dated April 2005. Lambourne Dep. Ex. 1077 at 2; Lambourne Dep. Tr. at 164:4-25 (not disagreeing with date). Sonos describes the “ZonePlayers” in the Sonos Digital Music System throughout that document.

It's the first and only multi-room digital music system with a wireless, full-color LCD screen Controller. This means you can now enjoy all your digital music, all over your home, and control it all from the palm of your hand.

With a Sonos Digital Music System you don't need a computer in every room, a music server, or a wireless computer network. Just a Sonos ZonePlayer and speakers in the rooms of your choice, and a Sonos Controller in hand to access all your digital music - no matter where it's stored.

Now you really can store your music wherever you please - on your computer, music server, network-attached storage (NAS) box, or even an external source like a CD player. Best of all, you can listen to music wherever you have Sonos ZonePlayers - in the bedroom, on the deck, or both.

E.g., id. at 5.

186. Sonos identifies the ZP100 as an example of a Zone Player (*i.e.*, ZonePlayer 100).

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ZonePlayer Setup and Operation

ZonePlayer Package Contents

- Sonos ZonePlayer ZP100
- Sonos System Setup software CD-ROM
- Ethernet (network) cable
- Power cord
- Setup Instructions

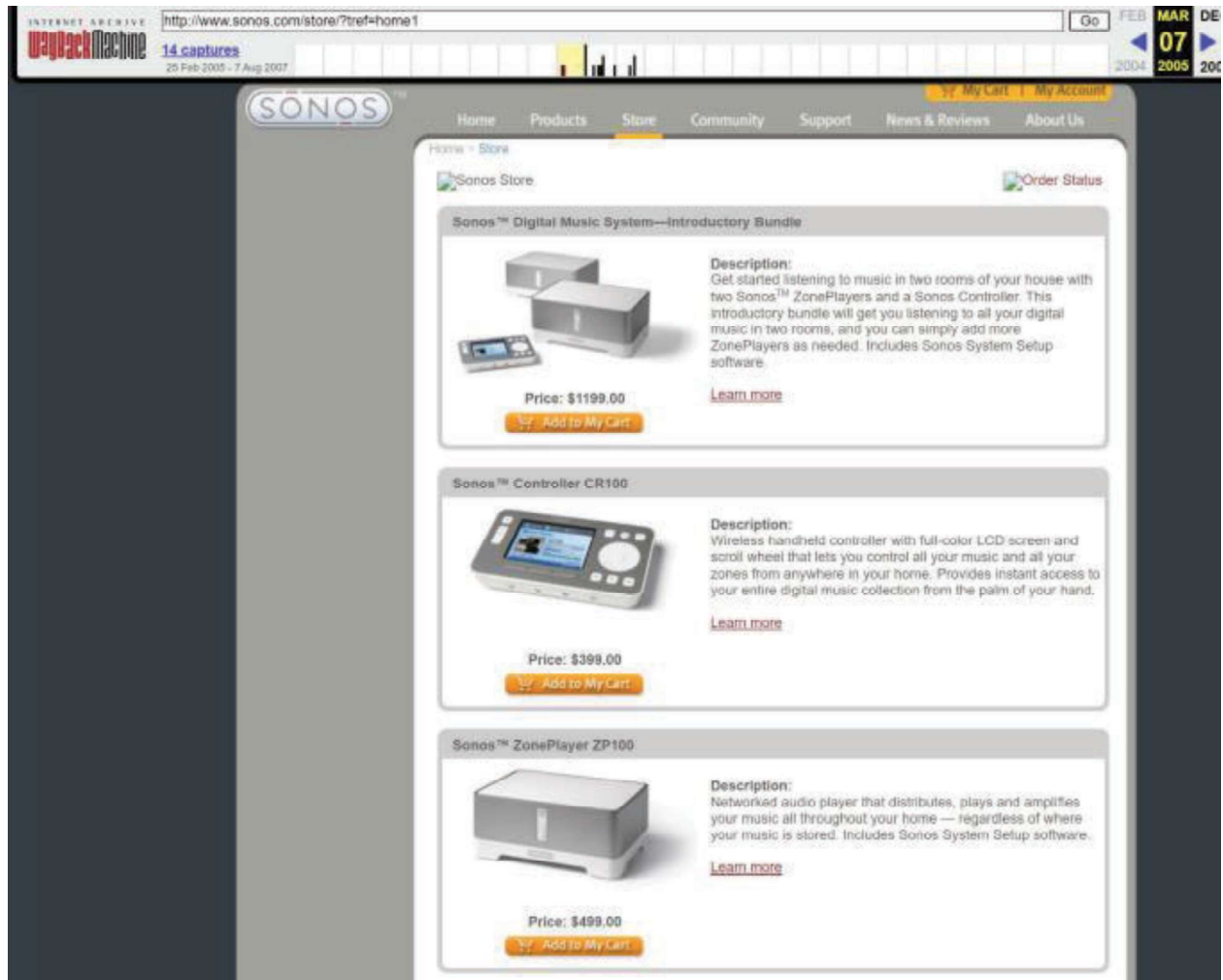
Where to Begin

Carefully unpack your Sonos ZonePlayer(s). Then follow the step-by-step instructions on the following pages to ensure that you set up your speakers and your ZonePlayer(s) correctly.

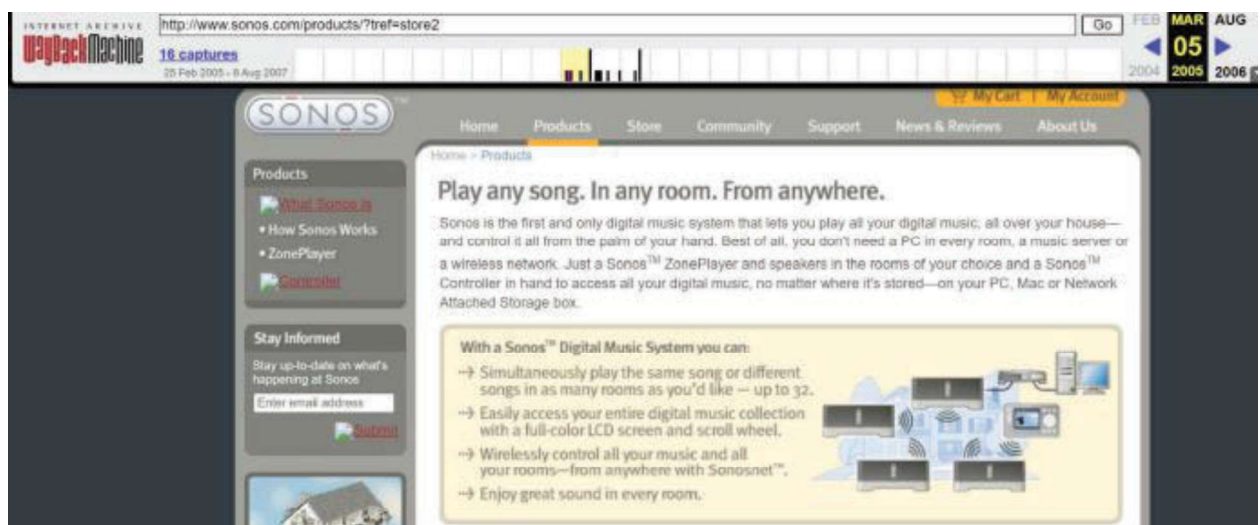
E.g., id. at 11.

187. Sonos advertised and sold this Zone Player prior to the critical date.

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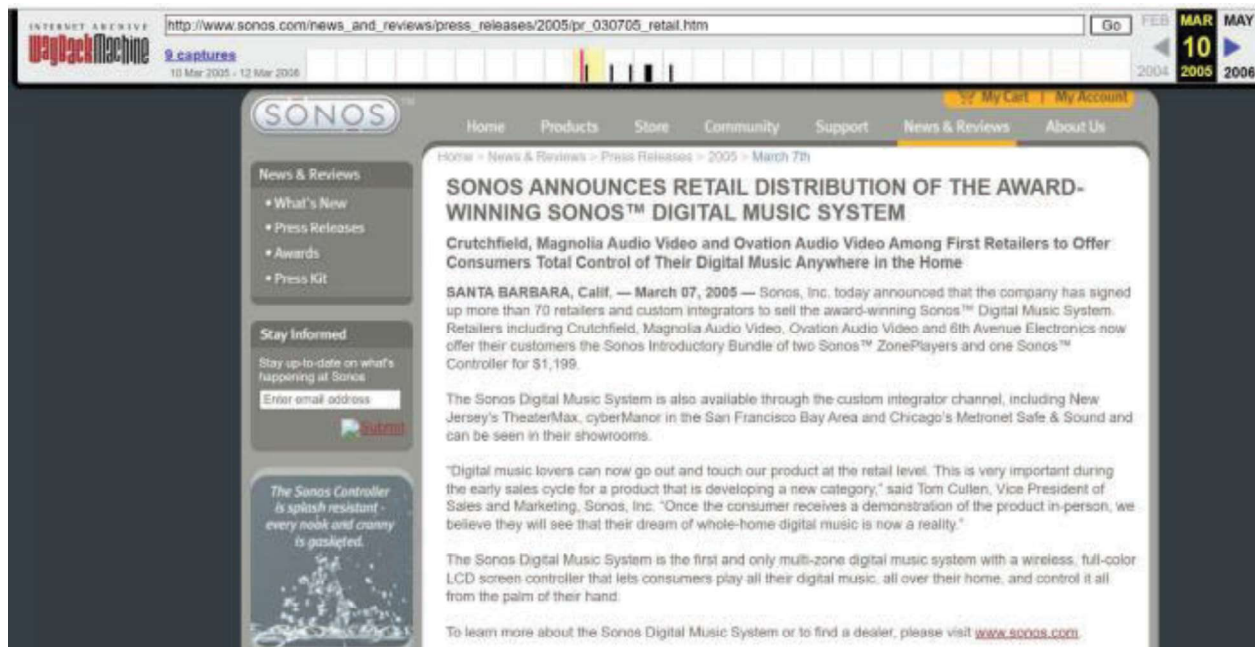


IA at 121.



IA at 123.

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IA at 164.



IA at 177.

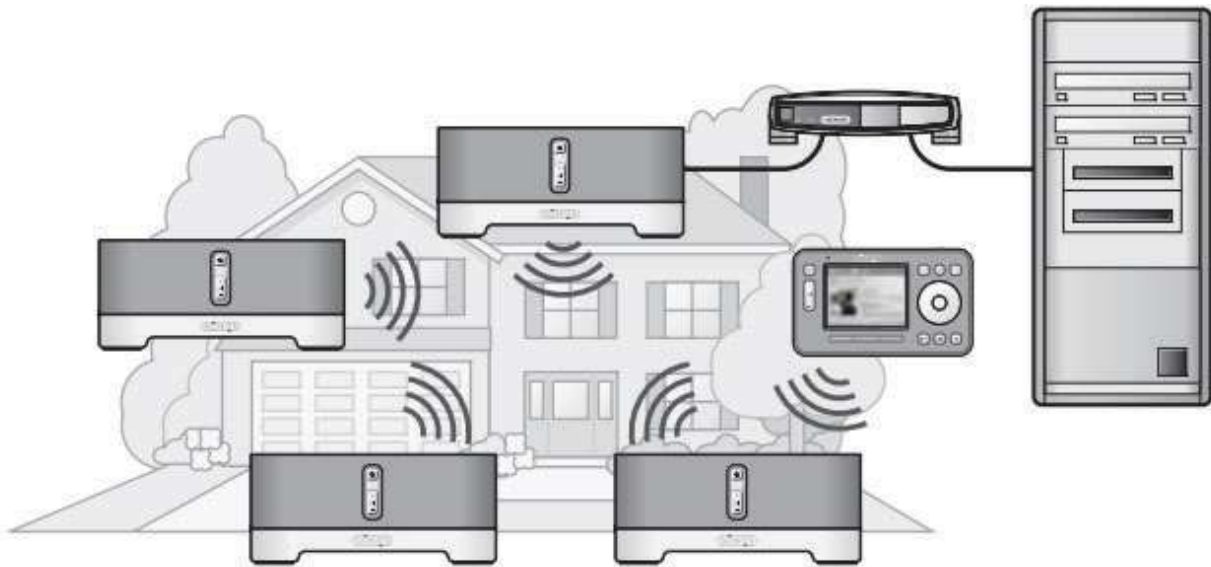
188. I understand that Sonos does not dispute that the Sonos System discloses this claim limitation. Specifically, I understand that Google served an interrogatory requesting Sonos's contentions for why Claim 1 of the '885 patent is not invalid over the Sonos System. I have reviewed Sonos's response ("Validity Contentions") as it relates to the Sonos System and Sonos does not dispute this claim limitation. See Validity Contentions (Attachment A to Sonos's Supp.

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Rsp. To Google's First Set of Rogs) at 85-86.

(ii) *Limitation 1.1: “a network interface that is configured to communicatively couple the first zone player to at least one data network;”*

189. In my opinion, the Sonos System discloses this claim limitation. For example, Sonos’s User Guide for the “Sonos Digital Music System” (*i.e.*, the Sonos System) is dated April 2005. Lambourne Dep. Ex. 1077 at 2; *supra*. Sonos describes the Zone Players as communicating over a wireless Wi-Fi network and wired Ethernet.



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Your Computer Network

To play the digital music files stored on your computer, your computer network must meet the following requirements:

Network requirements

- You must have an Ethernet network interface connection in your computer. If you do not have one, you will need to buy and install a Network Interface Card (NIC) before proceeding.
- DSL/cable modem, or LAN-based, high-speed Internet connection recommended.
- If you have a cable or DSL modem connected directly to your computer, **you should have a router connected between your modem and your computer** to maintain your computer's security. If you do not have a router, you should buy and install one before proceeding.

Where to Begin

Carefully unpack your Sonos ZonePlayer(s). Then follow the step-by-step instructions on the following pages to ensure that you set up your speakers and your ZonePlayer(s) correctly.



Note: If you should experience any difficulty during the setup process, see Appendix A for additional help.

1-2-3 Setup

It takes just 3 steps to get your Sonos Digital Music System up and running:

- 1 Connect speakers to your ZonePlayer
- 2 Connect the first Sonos ZonePlayer (with Ethernet cable supplied) to your home network
- 3 Install the computer software (or use a Controller) to configure your music system

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Rear Panel Connectors



Ethernet switch connectors (4)

Use Category 5 Ethernet cable to connect to a router, computer, or additional network device such as a network-attached storage (NAS) device.

LED indicators:

- Green (link connection)
- Flashing Yellow (network activity)

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2 Connect First ZonePlayer

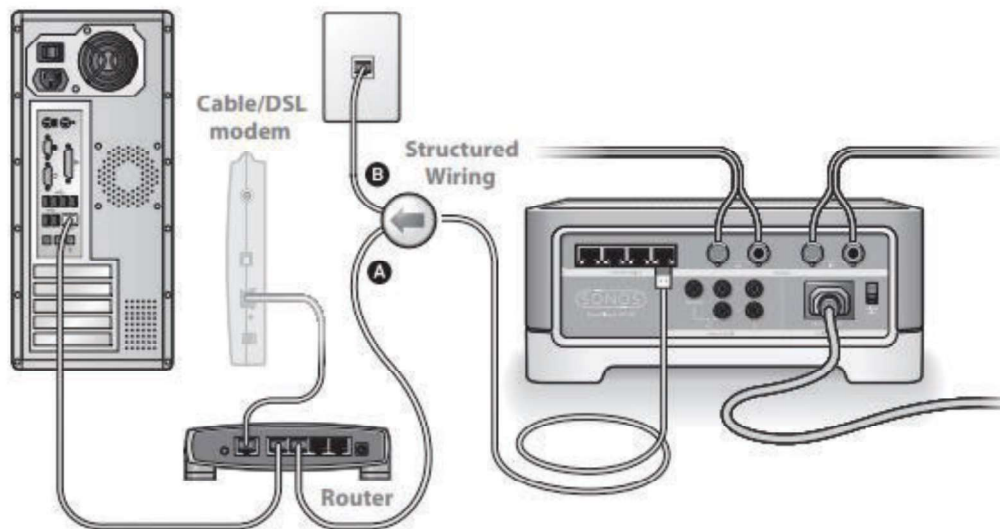


Note: The first ZonePlayer you install must connect to your home network using a standard Ethernet cable (supplied). If your computer only has a wireless connection, go to <http://faq.sonos.com/wireless> for assistance.

1. Connect the Ethernet cable from an open port on your router to any of the four (4) Ethernet switch connectors on the back of your ZonePlayer (see **A** in the diagram below).
 - **If your modem is currently plugged into the only network interface connector on your computer, you should install a router before continuing. If you don't have a router, go to <http://faq.sonos.com/norouter> for instructions.**

Or,

If you have structured (built-in) wiring that connects to a router located elsewhere in your home, you can connect the Ethernet cable from a live wall plate into one of the four Ethernet switch connectors on the back of your ZonePlayer (see **B** in the diagram below).

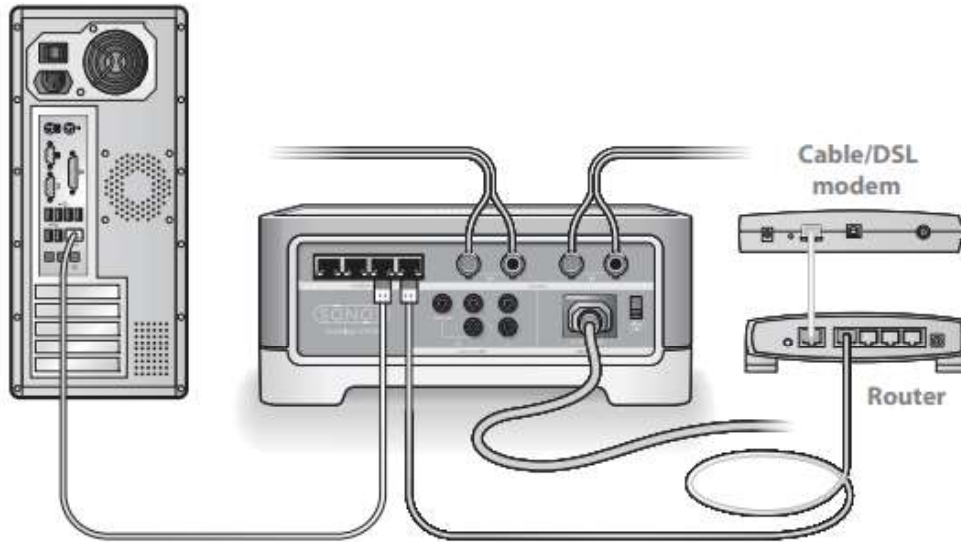


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Note: To maintain your computer's security, do not connect the ZonePlayer directly to your cable/DSL modem.

2. If you don't have an open port on your router, you can disconnect your computer from the router and connect it to the ZonePlayer instead. Then you can connect the ZonePlayer into the router port the computer was previously plugged into.



When and why should I use a wireless connection?

The Sonos Digital Music system uses a built-in wireless connection to communicate between the various ZonePlayers. You can place ZonePlayers anywhere you wish without physically connecting them to your computer network, as long as they are within transmitting range (up to 100 ft. depending upon your home's layout). This means that you do not need to go to the effort of installing cables, and you can change the location of your ZonePlayer at any time.

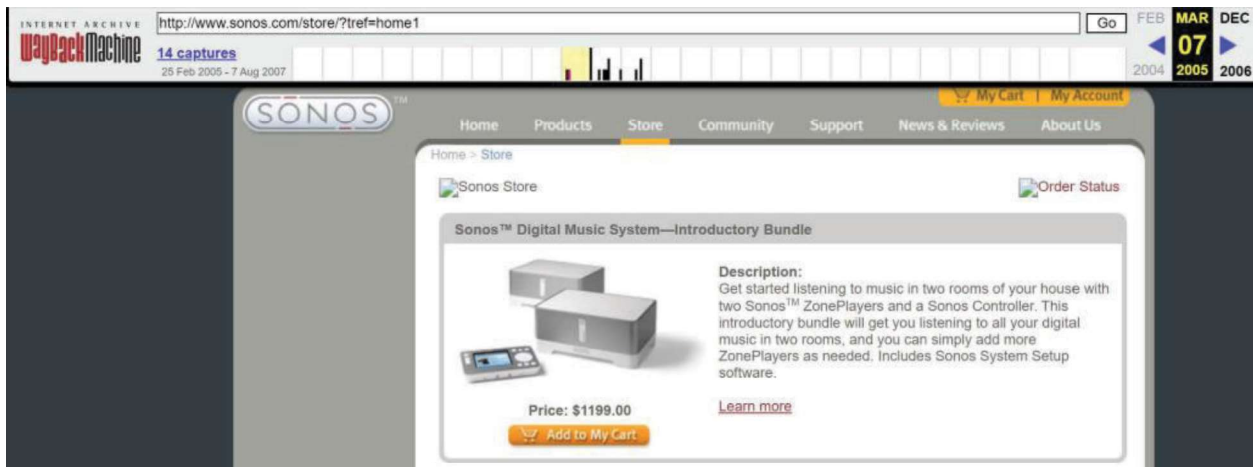
Use wireless connections when:

- You do not want to install network cables
- You may want to move the location of the ZonePlayer
- There is enough signal strength for the ZonePlayer to transmit and receive data reliably

Lambourne Dep. Ex. 1077 at 6-17.

190. The Sonos System is described by Sonos throughout its documentation as a “digital” system, and therefore meets Sonos’s proposed construction as well as Google’s.

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IA at 121.



IA at 123.



The diagram consists of several horizontal bars of different lengths and styles, arranged in a sequence. The top bar is a long, solid black rectangle. Below it is a long bar with a yellow outline. This is followed by another long solid black bar. Then, there is a short solid black bar. Below that is a row of six bars of varying lengths, all with yellow outlines. The next row contains four bars of varying lengths, all with yellow outlines. This is followed by a long solid black bar. Then, there is a row of four bars of varying lengths, all with yellow outlines. The final row consists of two bars of varying lengths, both with yellow outlines. The bars are arranged in a way that suggests a sequence or a timeline, with some bars starting at the same point and others starting at different points.

166

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contentions for why Claim 1 of the '885 patent is not invalid over the Sonos System. I have reviewed Sonos's response ("Validity Contentions") as it relates to the Sonos System and Sonos does not dispute this claim limitation. See Validity Contentions (Attachment A to Sonos's Supp. Rsp. To Google's First Set of Rogs) at 85-86.

(iii) *Limitation 1.2: "one or more processors;"*

193. In my opinion, the Sonos System discloses this claim limitation. As shown in teardowns of the ZP100, the system includes a motherboard with multiple processors.

Network card



1 – Remove the 4 top screws



2 – Unplug the power connector

3 – Unplug the ribbon connector (release by gently pulling the end clamp clips forward)

http://www.mediafire.com/file/0duavcuf1zyuc8u/sonos_dismantle.pdf/file?dkey=0duavcuf1zyuc8u; <https://en.community.sonos.com/advanced-setups-229000/sonos-zp100-dismantle-and-possible-repair-guide-35389>.

194. Further, Sonos's documentation discloses that the software running on the ZP100 and Sonos's other prior art zone players could be reprogrammed or updated. Accordingly, that software is executed by processors within the Zone Player as claimed.

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Getting Software Updates

Sonos periodically provides you with software updates to improve performance or to add new features. Your music system must be registered in order to receive updates.

There are two preference options available:

- Do not automatically check for updates. From the **Music** menu, you should periodically select **System Settings**→**Online Updates** to check for software updates.
 - Send a message when an update is available. (To change your preference setting, see "Auto check for software updates" on page 5-29.) The message, "Update Available" will appear on the **System Settings** menu next to **Online Updates** to indicate there are new Sonos updates available.
1. Touch **OK** to contact Sonos.
 2. If there is an update available, select **Yes** to begin the update process.

Your ZonePlayers and the Controller will be updated together as all Sonos components must carry the same software version number. This process may take several minutes per device, depending upon your network connection. Because this process can run unattended, Sonos recommends you start the update when you will be away from your Sonos Digital Music System for a period of time. If you have the Desktop Controller software installed, you will have to update it the next time you start the application.

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ZonePlayer(s) software updates

If a ZonePlayer's software version gets out of sync from the rest of your Sonos Digital Music System components, you will see the following message displayed on your **Zones** menu:



One or more ZonePlayers may need to be updated if you purchase a new ZonePlayer with a later software version, or if you plug in a ZonePlayer that was not in use when you performed your last software update.

You will also see this message if you have already updated your music system using the Controller. This message will indicate that the Desktop Controller software needs to be updated.

Touch **OK** to begin the software update process.

Lambourne Dep. Ex. 1078 at 22-23.

195. Further, the source code reveals that this claim limitation is met [REDACTED]

[REDACTED]

- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]

196. I understand that Sonos does not dispute that the Sonos System discloses this claim limitation. Specifically, I understand that Google served an interrogatory requesting Sonos's contentions for why Claim 1 of the '885 patent is not invalid over the Sonos System. I have reviewed Sonos's response ("Validity Contentions") as it relates to the Sonos System and Sonos

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does not dispute this claim limitation. *See* Validity Contentions (Attachment A to Sonos's Supp. Rsp. To Google's First Set of Rogs) at 85-86.

(iv) *Limitation 1.3: "a non-transitory computer-readable medium; and"*

197. In my opinion, the Sonos System discloses this claim limitation. As discussed with respect to Limitation 1.2 above, the Sonos System includes Zone Players that are digital and programmed with instructions that may be reprogrammed and updated. Accordingly, the Zone Players necessarily include a non-transitory computer-readable medium.

198. As shown in teardowns of the ZP100, the system includes a non-transitory computer-readable medium through nonvolatile memory on a motherboard.

Network card



1 – Remove the 4 top screws



2 – Unplug the power connector

3 – Unplug the ribbon connector (release by gently pulling the end clamp clips forward)

http://www.mediafire.com/file/0duavcuf1zyuc8u/sonos_dismantle.pdf/file?dkey=0duavcuf1zyuc8u; [https://en.community.sonos.com/advanced-setups-229000/sonos-zp100-dismantle-and-possible-repair-guide-35389.](https://en.community.sonos.com/advanced-setups-229000/sonos-zp100-dismantle-and-possible-repair-guide-35389)

199. Further, Sonos's documentation discloses that the software running on the ZP100 and Sonos's other prior art zone players could be reprogrammed or updated. Accordingly, that software is maintained on a non-transitory computer readable memory.

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Getting Software Updates

Sonos periodically provides you with software updates to improve performance or to add new features. Your music system must be registered in order to receive updates.

There are two preference options available:

- Do not automatically check for updates. From the **Music** menu, you should periodically select **System Settings**→**Online Updates** to check for software updates.
 - Send a message when an update is available. (To change your preference setting, see "Auto check for software updates" on page 5-29.) The message, "Update Available" will appear on the **System Settings** menu next to **Online Updates** to indicate there are new Sonos updates available.
1. Touch **OK** to contact Sonos.
 2. If there is an update available, select **Yes** to begin the update process.

Your ZonePlayers and the Controller will be updated together as all Sonos components must carry the same software version number. This process may take several minutes per device, depending upon your network connection. Because this process can run unattended, Sonos recommends you start the update when you will be away from your Sonos Digital Music System for a period of time. If you have the Desktop Controller software installed, you will have to update it the next time you start the application.

ZonePlayer(s) software updates



You will also see this message if you have already updated your music system using the Controller. This message will indicate that the Desktop Controller software needs to be updated.

Touch **OK** to begin the software update process.

200. Further, the source code reveals that this claim limitation is disclosed.

201. I understand that Sonos does not dispute that the Sonos System discloses this claim limitation. Specifically, I understand that Google served an interrogatory requesting Sonos's

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contentions for why Claim 1 of the '885 patent is not invalid over the Sonos System. I have reviewed Sonos's response ("Validity Contentions") as it relates to the Sonos System and Sonos does not dispute this claim limitation. *See* Validity Contentions (Attachment A to Sonos's Supp. Rsp. To Google's First Set of Rogs) at 85-86.

(v) *Limitation 1.4: "program instructions stored on the non-transitory computer-readable medium that, when executed by the one or more processors, cause the first zone player to perform functions comprising:"*

202. In my opinion, the Sonos System discloses this claim limitation. For the reasons stated above with respect to Limitations 1.2 and 1.3, the Zone Players in the Sonos System include program instructions stored on the non-transitory medium that when executed by the processors perform the functions discussed in the following claim limitations, as described below. The Zone Players maybe programmed and updated, and once programmed and/or updated, the Zone Players execute the instructions that are stored on the Zone Player.

203. I understand that Sonos does not dispute that the Sonos System discloses this claim limitation. Specifically, I understand that Google served an interrogatory requesting Sonos's contentions for why Claim 1 of the '885 patent is not invalid over the Sonos System. I have reviewed Sonos's response ("Validity Contentions") as it relates to the Sonos System and Sonos does not dispute this claim limitation. *See* Validity Contentions (Attachment A to Sonos's Supp. Rsp. To Google's First Set of Rogs) at 85-86.

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(vi) *Limitation 1.5: “while operating in a standalone mode in which the first zone player is configured to play back media individually in a networked media playback system comprising the first zone player and at least two other zone players:”*

204. In my opinion, the Sonos System discloses this claim limitation.

205. I note that Sonos has taken a position during its summary judgment briefing regarding what disclosure is adequate to disclose “standalone” mode.

First, a POSITA would understand that the claimed “standalone mode in which the first zone player is configured to play back media individually” refers to a “zone player” operating in a non-grouped state in which it is configured to play back audio on its own, rather than as part of a group for synchronous playback. See Ex. R, ¶53. As explained above, the ’885 Patent clearly discloses that “zone players” are capable of operating in such a “standalone mode.” *Supra* II.B.i.; ’885 Pat., 4:44-5:2, 5:21-6:27, 6:39-43; Ex. R, ¶39, 53.

That the ’885 specification does not use the term “standalone mode” verbatim does not mean that there is no written description support for that claim term. See *Novartis Pharms. Corp. v. Accord Healthcare, Inc.*, 21 F.4th 1362, 1370 (Fed. Cir. 2022).

Notably, although not relevant to whether there is written description support, Google appears to be improperly interpreting the claim term “standalone mode” to require that the “first zone player” be engaged in active playback. D.I. 249, 22. A “zone player” can be in “standalone mode” whether or not the “zone player” is engaging in active playback. Ex. R, ¶53 n5.

Dkt. 273-4 at 11.

206. As noted above, Sonos cites to the following sections of the ’885 patent to show that “standalone” mode is disclosed.

There are a number of multimedia players of which three examples 102, 104 and 106 are shown as audio devices. Each of the audio devices may be installed or provided in one particular area or zone and hence referred to as a zone player herein.

As used herein, unless explicitly stated otherwise, an audio source or audio sources are in digital format and can be transported or streamed over a data network.

’885 patent at 4:44-5:2.

Referring now to FIG. 2A, there is shown an exemplary functional block diagram of a zone player 200 in accordance with the present invention. The zone player 200 includes a

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network interface 202, a processor 204, a memory 206, an audio processing circuit 210, a module 212, and optionally, an audio amplifier 214 that may be internal or external. The network interface 202 facilitates a data flow between a data network (i.e., the data network 108 of FIG. 1) and the zone player 200 and typically executes a special set of rules (i.e., a protocol) to send data back and forth. One of the common protocols used in the Internet is TCP/IP (Transmission Control Protocol/Internet Protocol). In general, a network interface manages the assembling of an audio source or file into smaller packets that are transmitted over the data network or reassembles received packets into the original source or file. In addition, the network interface 202 handles the address part of each packet so that it gets to the right destination or intercepts packets destined for the zone player 200.

The network interface 202 may include one or both of a wireless interface 216 and a wired interface 217. The wireless interface 216, also referred to as a RF interface, provides network interface functions by a wireless means for the zone player 200 to communicate with other devices in accordance with a communication protocol (such as the wireless standard IEEE 802.11a, 802.11b or 802.11g). The wired interface 217 provides network interface functions by a wired means (e.g., an Ethernet cable). In one embodiment, a zone player includes both of the interfaces 216 and 217, and other zone players include only a RF or wired interface. Thus these other zone players communicate with other devices on a network or retrieve audio sources via the zone player. The processor 204 is configured to control the operation of other parts in the zone player 200. The memory 206 may be loaded with one or more software modules that can be executed by the processor 204 to achieve desired tasks. According to one aspect of the present invention, a software module implementing one embodiment of the present invention is executed, the processor 204 operates in accordance with the software module in reference to a saved zone group configuration characterizing a zone group created by a user, the zone player 200 is caused to retrieve an audio source from another zone player or a device on the network.

According to one embodiment of the present invention, the memory 206 is used to save one or more saved zone configuration files that may be retrieved for modification at any time. Typically, a saved zone group configuration file is transmitted to a controller (e.g., the controlling device 140 or 142 of FIG. 1, a computer, a portable device, or a TV) when a user operates the controlling device. The zone group configuration provides an interactive user interface so that various manipulations or control of the zone players may be performed.

The audio processing circuit 210 resembles most of the circuitry in an audio playback device and includes one or more digital-to-analog converters (DAC), an audio preprocessing part, an audio enhancement part or a digital signal processor and others. In operation, when an audio source is retrieved via the network interface 202, the audio source is processed in the audio processing circuit 210 to produce analog audio signals. The processed analog audio signals are then provided to the audio amplifier 214 for playback on speakers. In addition, the audio processing circuit 210 may include necessary circuitry to process analog signals as inputs to produce digital signals for sharing with other devices on a network.

Depending on an exact implementation, the module 212 may be implemented as a combination of hardware and software. In one embodiment, the module 212 is used to save a scene. The audio amplifier 214 is typically an analog circuit that powers the provided analog audio signals to drive one or more speakers.

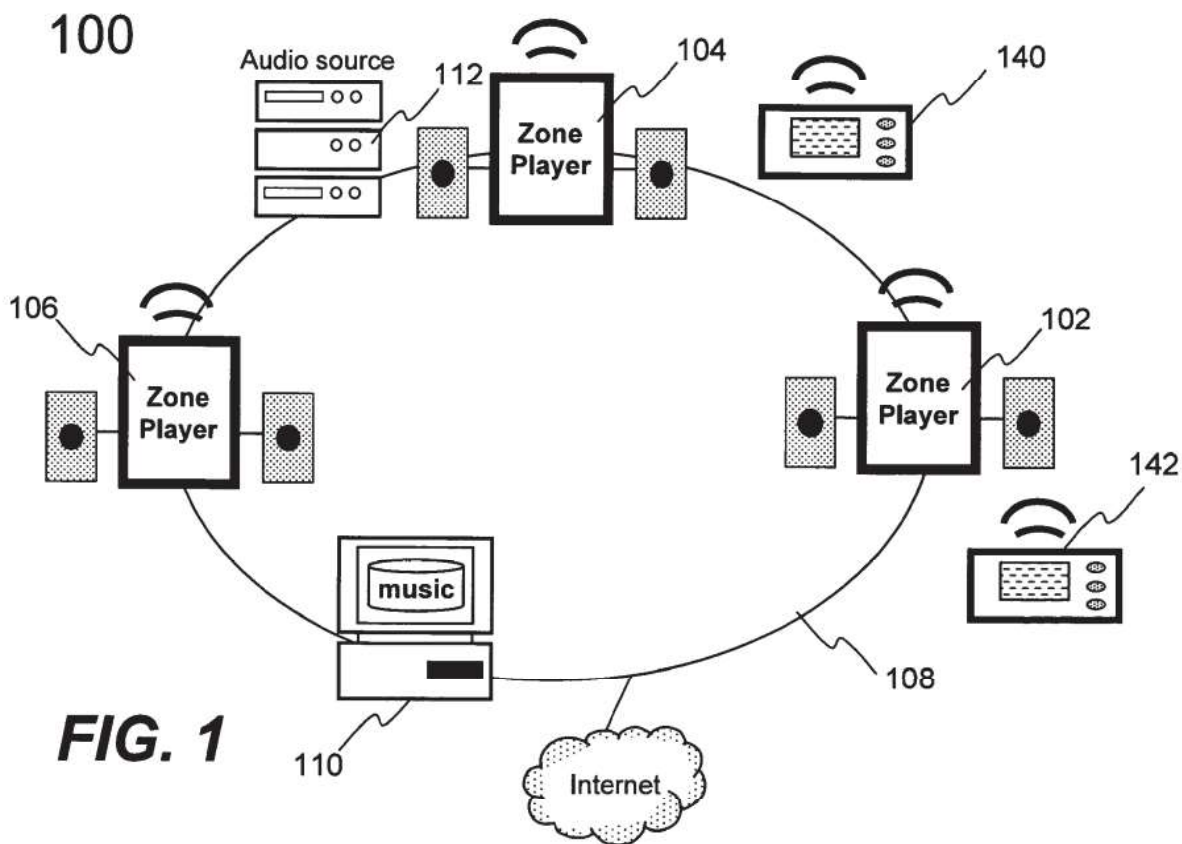
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'885 patent at 5:21-6:27.

When a particular audio source is being played in the zone player 200, a picture, if there is any, associated with the audio source may be transmitted from the zone player 200 to the controller 240 for display.

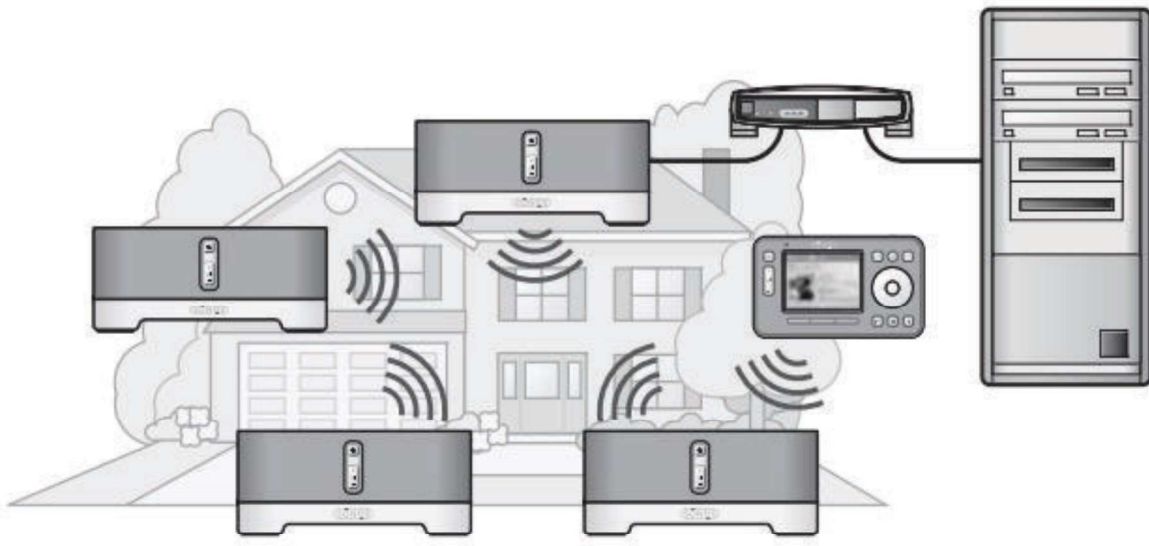
'885 patent at 6:39-43.

207. In the first portion of the specification cited above, Sonos appears to be arguing that “standalone” mode is disclosed through 102, 104, and 106 of the '885 Patent, as shown in Figure 1 below:



208. A very similar image appears in the Sonos user manual showing the Zone Players (the ZP100s), just as they were identified in the specification above (102, 104, 106).

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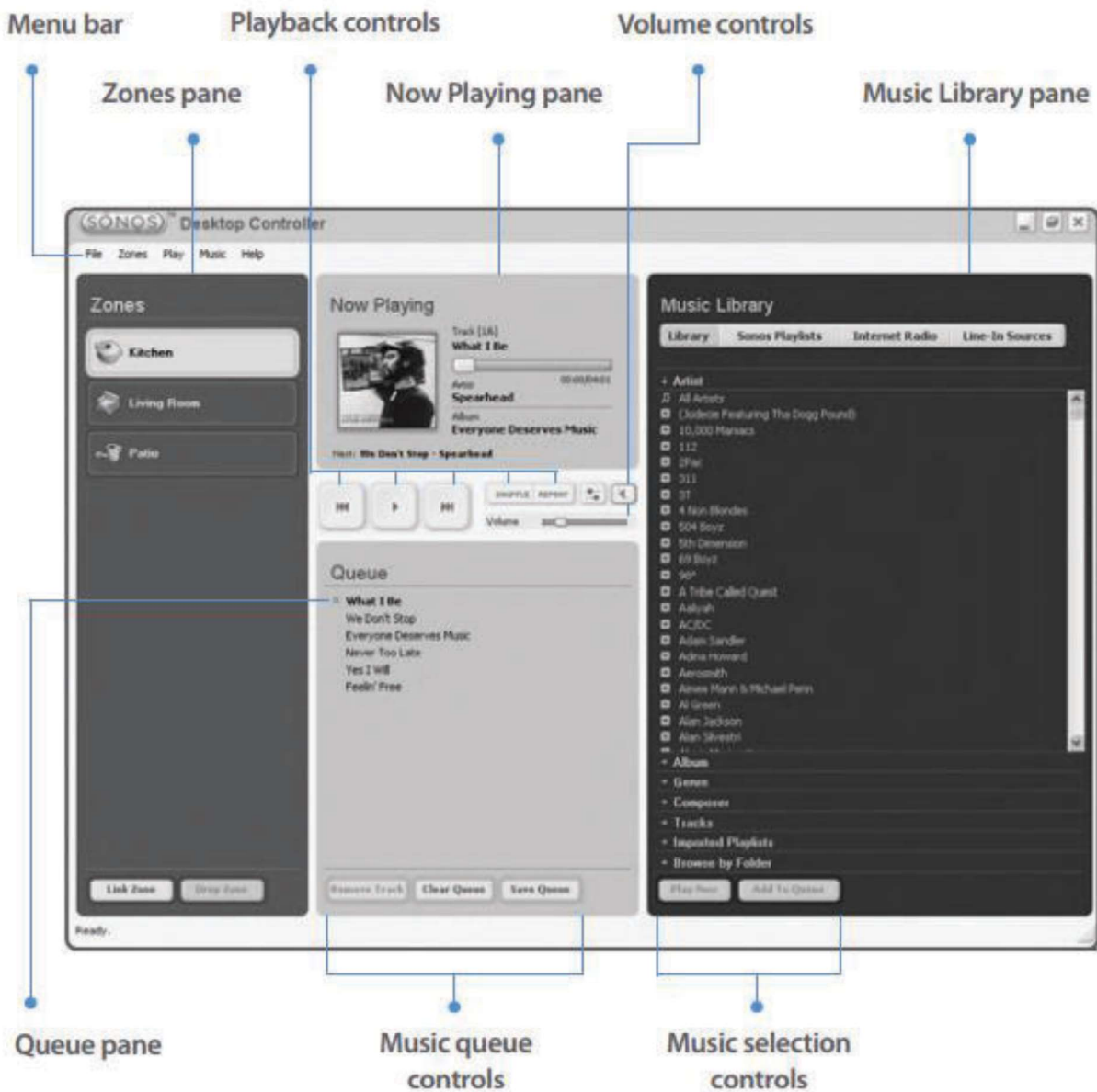


Lambourne Dep. Ex. 1077 at 6.

209. Sonos also argues that the mere ability of the Zone Player to output audio, as shown through 5:21-6:27, discloses the “standalone” mode. *E.g.*, ’885 patent at 5:21-6:27 (“when an audio source is retrieved via the network interface 202, the audio source is processed in the audio processing circuit 210 to produce analog audio signals. The processed analog audio signals are then provided to the audio amplifier 214 for playback on speakers.”). Zone Player 100 of the Sonos System likewise includes the same functionality, including the ability to select a Zone Player and play back audio to that Zone Player.

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The Desktop Controller Main Menu



Lambourne Dep. Ex. 1077 at 25.

210. As Sonos argued in its MSJ briefing (quoted above), the fact that the Sonos documentation does not include the term “standalone mode” does not prevent it from disclosing “standalone mode.” Sonos further argued that “standalone mode” is disclosed by the ’885 Patent regardless of whether the disclosed Zone Players are actively playing back music—in other words,

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just the fact that they exist and have the ability to play back music is sufficient. This is likewise disclosed by the Zone Players because they may or may not play back music, as shown above.

211. The source code reveals that this claim limitation is met. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

212.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

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[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

213. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

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[REDACTED]

[REDACTED]

[REDACTED]

(vii) *Limitation 1.6: “(i) receiving, from a network device over a data network, a first indication that the first zone player has been added to a first zone scene comprising a first predefined grouping of zone players including at least the first zone player and a second zone player that are to be configured for synchronous playback of media when the first zone scene is invoked; and”*

214. In my opinion, the Sonos System discloses this claim limitation.

215. Sonos discussed this claim limitation, in part, in its summary judgment briefing.

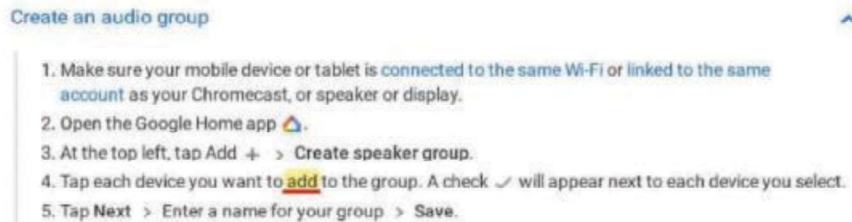
See Dkt. 252-2. Sonos argued:

The evidence indisputably shows that (i) the process for creating a new Google speaker group involves a user selecting Accused Google Players to add to the speaker group via the Google Home app on the user’s controller device (the claimed “network device”), which then causes the user’s controller device to transmit a “join_group” message to each Accused Google Player that was added to the speaker group via the Google Home app, and (ii) the “join_group” message includes identifying information for the new speaker group. See D.I. 208, 4-7, 16-18. For instance, in its response to Sonos’s Interrogatory No. 13 (D.I. 208.03, Ex. B, 9), Google admitted:

“[A] user may select a specific device and add it to a group in [the Google] Home app, which causes the Google Home app to send a join_group command to that device” and A “join_group command” includes a “unique ID identifying the group” and a “name.” See also Ex. S (Mackay ITC Dep. Tr.), 112:2-5 (Google engineer testifying “the user selects a specific device and adds it to a group in [the] Home app, and that causes the Home [app] to send a join_group command to that device.”).

Google’s website (D.I. 208-6, Ex. E, 7068) similarly instructs a user creating a speaker group to “[t]ap each device you want to add to the group”:

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This evidence clearly establishes that each “join_group” message is “a [] indication that the [Accused Google Player] has been added to a [] [speaker group]” at the claimed “network device.”

Faced with these admissions and other evidence of infringement, Google now tries to rewrite the “has been added” language of limitations 1.6 and 1.7 so that instead of requiring the “zone player” to receive “indications” that it “has been added” to “zone scenes” at the “network device” based on user input, it would require that the “first zone player” to receive indications that it has already previously “joined” itself to the “zone scenes.” See D.I. 249, 7-8. As such, Google is conflating the network device’s act of adding a “zone player” to a “zone scene” based on user input – which is what is claimed – with the zone player’s subsequent act of associating itself with (i.e., “joining”) a “zone scene.” And Google then relies on this rewrite to argue that because the “join_group” messages do not indicate that an Accused Google Player has already previously “joined” itself to a speaker group, they do not amount to the claimed “indications.” *Id.* However, Google’s convoluted theory is based on an erroneous interpretation of the claimed “indication” that is contrary to the plain claim language and excludes the preferred embodiment in the ’885 Patent.

To start, the plain language of the “indication” limitations does not say anything about whether the “first zone player” has already “joined” itself to a “zone scene” before a claimed “indication” is received. Instead, the plain language describes the “first zone player” receiving, from a “network device,” an “indication” that that the “first zone player” “has been added” to a “zone scene.” The claim’s use of the past-tense phrase “has been added” here when describing the “indication” that is received “from a network device” logically establishes that the claim is referring to some “add[]” action that previously took place at the “network device” prior to the “indication” being sent and received – namely, the action of adding a “zone player” to a “zone scene” at the “network device” based on user input – and not some prior “join” action that would have been taken by the “zone player” independent of the “network device,” as Google asserts. *See Ex. R, ¶22.*

Consistent with the logical reading of the claim language, the ’885 Patent only uses the term “add” or “added” in the context of the user interface for creating a zone scene and specifically the “add” actions that are carried out at the controller device (i.e., the claimed “network device”) in order to create the “zone scene” prior to it being saved. For instance, with respect to Figure 5A annotated here), the specification explains that a “user interface 500” on a controller can be used to create a “zone scene” by “add[ing]” or removing zone players from the zone scene via “Add/Remove buttons.” ’885 Pat., 5:19-20, Fig. 5A. The ’885 Patent also makes clear that the controller device’s action of adding zone players to a zone scene based on user input via the above “Add” button precedes and is distinct from

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the zone player's action of associating itself with (i.e., joining) the zone scene, which cannot take place until after the zone player has been "added" to the zone scene at the controller device. *See* Ex. R, ¶23.

Relatedly, the '885 Patent never once uses the term "add" or "added" to refer to the "zone player's" action of associating itself (i.e., joining) with a "zone scene" that has previously been created at the user's controller device, as Google's interpretation would require. *Id.*, ¶24.

This intrinsic evidence confirms that each of limitations 1.6-1.7 is referring to an "indication" that the "zone player" has been "added" to a "zone scene" at the "network device" based on user input – not that it has "joined" the "zone scene." *Id.*, ¶25. And as established by the evidenced cited above, the accused "join_group" messages indisputably satisfy these limitations.

Google also disputes that its "join_group" messages amount to the claimed "indications" of limitations 1.6 and 1.7 based on the theory that each "indication" must include identifiers for the "zone players" that have been added to the "zone scenes" and that Google's "join_group" messages for new speaker groups do not include identifiers for the Accused Google Players that have been added to the new speaker groups. *See* D.I. 249, 9-11. Again, Google's claim interpretation is flawed.

The particular claim language at issue is:

a [given] indication that the first zone player has been added to a [given] zone scene comprising a [given] predefined grouping of zone players including at least the first zone player and a [given other] zone player that are to be configured for synchronous playback of media when the [given] zone scene is invoked;

According to Google, the "comprising" phrase in the latter part of this clause modifies the term "indication" at the beginning of the clause such that it requires the "indication" itself to "comprise 'at least the first zone player and a [given other] zone player'" – which Google then interprets to mean that the "indication" must include identifiers of the added "zone players." *Id.*

Google's interpretation is inconsistent with the plain language of the clause. As written, the "comprising" phrase clearly modifies the term "zone scene" that immediately precedes it, not the term "indication" that appears earlier in the clause. *See* Ex. R, ¶32. As such, the "comprising" phrase serves to define what the claimed "zone scene" is required to include – not what the claimed "indication" is required to indicate. *Id.* In this way, the "indication" must be an "indication that the first zone player has been added to [a given] zone scene" – nothing more is required by the "indication." Separately, the "zone scene" to which the "zone player" has been added must comprise "[a] predefined grouping of zone players including at least the first zone player and [another] zone player," but this is distinct from what the "indication" must indicate. Thus, there is no requirement that each claimed "indication" include identifiers of the added "zone players." *Id.*

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As explained above, each accused “join_group” message comprising a “unique ID identifying the group” and “group name” does indicate that an Accused Google Player has been added to a particular speaker group, which is all that needed for infringement under the proper interpretation of each claimed “indication.” *Supra* II.A.ii; *see also* Ex. R, ¶26-29, 33.

Id. at 4-7.

216. Sonos therefore contends that adding a speaker to a speaker group via a controller and sending an “indication” that need not include the “zone scene” or the players in that zone scene is sufficient to meet this claim limitation.

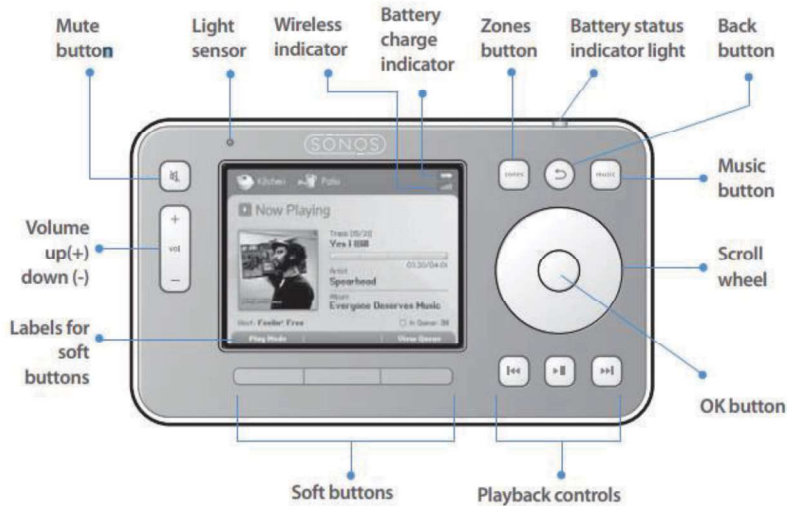
217. The Sonos System discloses this behavior. The claim limitation requires the Zone Player (previously identified as a ZP100 or other Zone Player on sale) to receive information from a network device over a data network. The network device may comprise the CR100 controller or the Mac or Windows desktop controller software, all of which allow a user to control Zone Players remotely over Wi-Fi or wired data networks. The Sonos System allows a Zone Player to receive a first indication in the form of network messages passed from the controller indicating that the Zone Player is to synchronously playback media with other Zone Players when the “zone scene” that those players were added to is invoked by selecting that “zone scene” for synchronous playback. The “zone scene” may be a group of speakers either defined by the user or predefined by the system, such as “Kitchen,” “Dining Room,” “Party Mode,” etc.

218. As Mr. Lambourne described, the CR100 controller or the desktop controllers for Mac or Windows could link and control the Zone Players. Lambourne Dep. Tr. at 67:17-25 (“The Party Mode that was originally put into the product was a button that would -- the control -- it was a button that appeared on the interface of a control device. Either a handheld control, we called it the CR 100, I think, at the time, or a desktop controller and pressing that button would group in that case all the speakers together so they would play music together in synchrony.”). The Sonos System user manual also describes using the CR100 controller as well as the Mac and Windows

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desktop controllers to send the claimed indication to the Zone Player. Images for the CR100 controller are shown below.

Using the Controller



Navigation



Zones. Use the **Zones** button to select a zone to play music in, or to view the music selections playing in each zone. You can also use this button to create or modify *zone groups* any time you want to share the same music across multiple zones.

Lambourne Dep. Ex. 1077 at 60.

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To add a zone to a zone group

1. Touch the **Zones** button on your Controller.



2. Highlight the zone or zone group you want to add a zone to, and touch **Link Zone**.



Note: The order in which you add a zone makes a difference. If you select **Link Zone** from a zone where there is no music playing, any zone you link to it will also be silent.

3. Highlight the zone you want to add to the group, and touch **OK**. If you want to join all the zones in your house to this music queue, select **All Zones-Party Mode**. All of your ZonePlayers will then play the same music until you drop the zones from the zone group.



Kitchen and Garden make up a zone group

The music queue from the added zone is automatically replaced by the music queue from the zone or zone group it was linked to so that both zones play the same music

Lambourne Dep. Ex. 1078 at 4.

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To drop a room from your zone group

1. Touch the **Zones** button on your Controller.



2. Use the scroll wheel to highlight the zone group you want to change, and touch **Drop Zone**.
3. Highlight the zone you want to drop from the group, and touch **OK**. The room that's removed from the zone group stops playing music. The other zones in the zone group continue unaffected.

Id. at 5.

219. The Sonos System allows a user to add a speaker to a group and send an indication of that addition. A user may, for example, use the desktop controller software to “link” zone players together to create a “zone scene,” under Sonos’s understanding of that term.² Below, the example of “linking” the Kitchen Zone Player with the “Jack’s room” Zone Player is described. Another example of linking “Kitchen” with “[All Zones – Party Mode]” is also given.

² Sonos has taken the following position regarding the meaning of “zone scene.” Sonos argues that “zone scene” means “a previously-saved grouping of zone players that are to be configured for synchronous playback of media when the zone scene is invoked.” Dkt. 273-4 (Sonos Reply ISO MSJ) at 1-3. Sonos has argued that merely “thematically” naming a previously saved group is sufficient to meet the definition of “zone scene.” Google has argued, on the other hand, that merely naming a speaker group is insufficient and that a common theme is required. I agree that Sonos’s claim construction of this term is flawed and that its position regarding “thematic” naming is ambiguous.

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To link a zone to a zone group

You can create a zone group first and then select music to play, or you can add a zone to a zone group where music is already playing.



Note: Any zones you link will automatically drop their current music queue and begin to play the music queue from the highlighted zone. You may sometimes want to save your music queue before linking a zone. See "To create a Sonos playlist" on page 3-17.

1. From the **Zones** pane, highlight the zone you want to link another zone or zone group to.
2. Choose one of the following options:

- Click **Link Zone**.

Or,

- From the **Zones** menu, click **Link Zone**.



3. Select a zone to add to the group, and click **OK**. If you want to join all the zones in your house to this music queue, select **All Zones-Party Mode**. All of your ZonePlayers will then play the same music until you drop the zones from the zone group.



Note: The order in which you add a zone makes a difference. If you select **Link Zone** from a zone where there is no music playing, any zone you link to it will also be silent.

Lambourne Dep. Ex. 1077 at 30; *see also* IA at 123, 125 (describing multi-room features).

220. The previously saved and named group, for example “Jack’s room + Kitchen” in the example below, can also be modified by removing Zone Players from the group, as shown below.

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To drop a zone from your zone group

1. From the **Zones** pane, highlight the zone group you want to change.
2. Choose one of the following options:

- Click **Drop Zone**.

Or,

- From the **Zones** menu, click **Drop Zone**.



3. Select the zone you want to unlink from the group, and click **OK**.

The zone that's removed from the zone group stops playing music. The other rooms in the zone group continue unaffected.

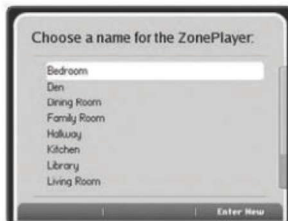
Lambourne Dep. Ex. 1077 at 31.

221. Zone Players and therefore groups of Zone Players may be named or renamed per the user's preference. Other groups such as "Party Mode" are preconfigured and also available to a user. As such, under Sonos's proposed construction of the term "zone scene," this claim limitation is met.

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Renaming a ZonePlayer

1. From the **Music** menu, select **System Settings**→**Rename ZonePlayers** and touch **OK**.
2. Use the scroll wheel to highlight the ZonePlayer name you wish to change, and touch **OK**.
3. Use the scroll wheel to select a new name from the list, and then touch **OK**.



4. You can also type a unique name by selecting **Enter New**.



5. Use the scroll wheel to select each letter, touching **OK** after each entry.
6. Touch **Accept** to accept the new name, or touch **Cancel** to leave the screen without making a change.

Lambourne Dep. Ex. 1078 at 18.

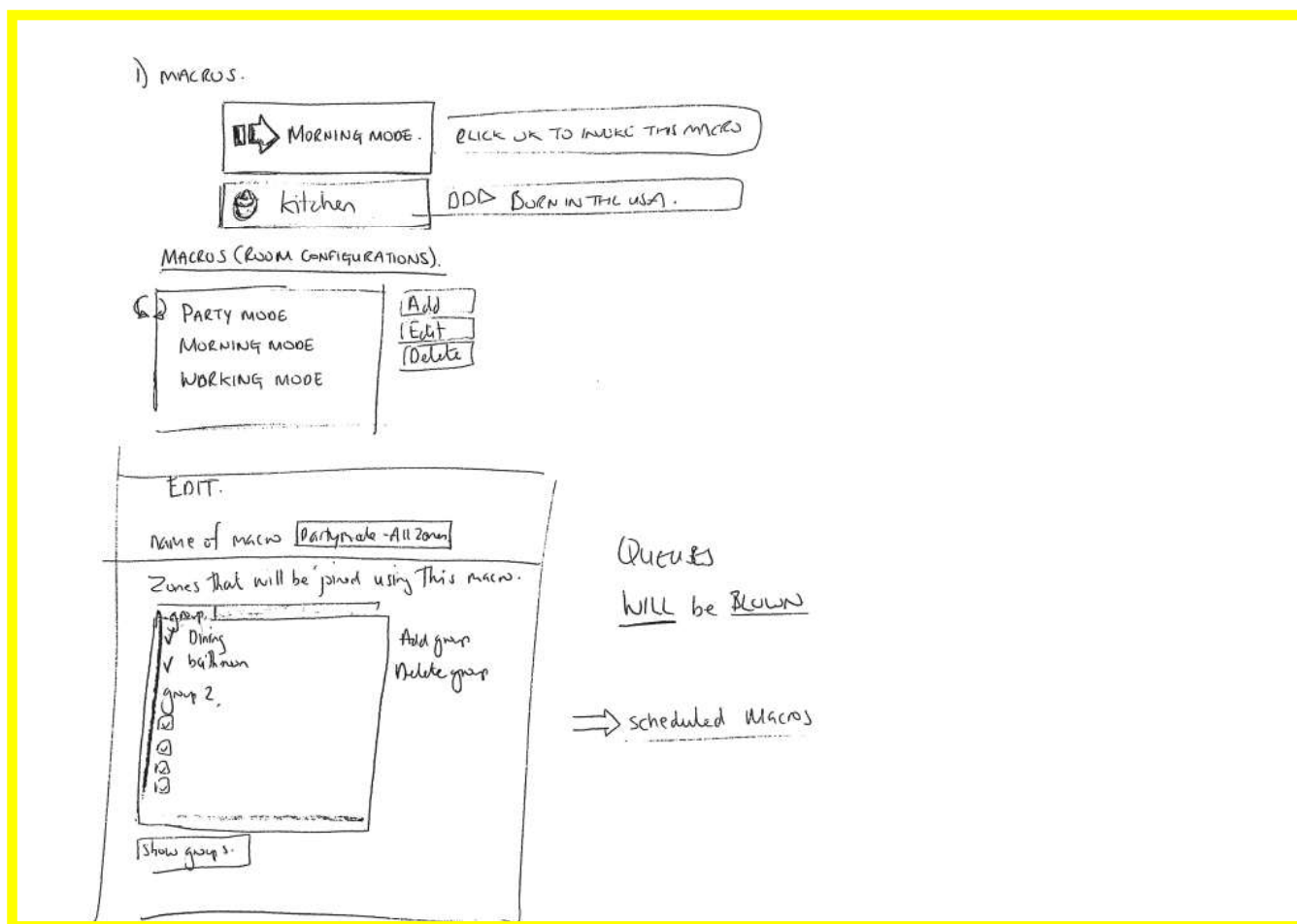
222. Mr. Lambourne also testified that the Zone Player in the Sonos System would receive the claimed indication, stating that “the Party Mode in our original controller was a command sent by the control design that would tell the speakers in that moment to go for a group, and Party Mode was the term we gave to all the speakers together. This can be referring to that as saying okay, A and B are linked; C and D are linked; but Party Mode invokes them to join together. That could be coming from the control device and then he's describing how the end of Party Mode, A and B and C and D would stay together.” Lambourne Dep. Tr. at 79:2-12; 93:15-17 (“If Party Mode was -- if the user pressed Party Mode on the controller, then A, B and C would be caused to be grouped together.”); 118:24-119:4 (“Well, the wireless controller that we've been talking about earlier would be used to create that groups of -- I think you said A, B and C and D. So yeah, the

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wireless controller was being used to generate the command to make that group.”); 86:6-7 (“Yes. The Zone Players received commands from the CR 100.”); 187:17-21 (“That -- yes, that's one way that the user could get the -- get the rooms to all play the same music. They can also group the speakers, which is effectively the command that Party Mode sent to the player.”).

223. Sonos has also provided documentation showing that “zone scenes” were included in the Sonos System. For example, Mr. Lambourne testified that “party mode” was a “zone scene.” Lambourne Dep. Tr. at 63:8-13 (“Q. The Party Mode setting is a Zone Scene; right? THE WITNESS: Yeah. I think I describe a Party Mode as an example of a Zone Scene that can be set up, created.”) (objection omitted); 48:13-22 (“Q. Below the macros, in parenthesis, room configurations, there's a box with three entries. One says "party mode," one says "morning mode," and the final says "working mode." Do you see that? A Yes. Q. Were those examples of zone scenes? A Yes. Q. How do you know? A. Because I designed it.”).

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Lambourne Dep. Ex. 1097 at 42.

224. Sonos has also argued at times that a group must either be saved or named for a group to be considered a zone scene. As described above, however, groups that the user creates and groups that the Sonos System creates, such as Party Mode, are saved. A user can, for example, play to a particular group, pause or stop playback to that group, and restart or play new music to that group later. Party Mode is another group that is constantly accessible to the user. And a user may name Zone Players, which when grouped together take on a concatenated name. As such, a user can create a group with a particular name. Each of these features are discussed *supra*.

225. [REDACTED]

226. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

193

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228. _____

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[REDACTED]

[REDACTED]

229. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

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1) Obviousness – Sonos Forums

230. It would also have been obvious to modify the Sonos System to add this claim limitation, to the extent it is not disclosed. For example, the Sonos Forums described *supra* (and fully incorporated herein by reference), disclose the “macro” / “zone scene” Sonos allegedly invented.

Macro / presets

16 years ago • 61 replies

JeffT

Just got the intro bundle, and I am impressed. I did a search and did not find this suggested, but I would save Zone links as favorites. With only 2 ZPs it is not a problem yet, but when I add more it maybe. I would like to setup say Morning mode for the units I want in the morning and a preset volume between the units. Another example I would have 2 party modes, Summer and Winter. The Summer mode would include the deck speakers and the Winter mode would not. Also it would be nice to have playlists or radio station associated with each mode. So when I get up I press Morning the DI Chill radio station plays.

Jeff

Farrar Dep. Ex. 6 at 1.

Virtual Zones and Zone Grouping

17 years ago • 190 replies

theboyg

This "link/unlink" business is really cumbersome - and not a joy to use which goes against the ease of use of the rest of the system.

Why can't I have a virtual zone - ie a zone called "Downstairs" - and I can group all my downstairs zones into this. Then I dont have to keep manually linking/unlinking multiple zones everytime.

PLEASE !

G.

2 people like this

👍 🗨️ ✕

Exhibit
0008

Farrar Dep. Ex. 8 at 1.

231. As Mr. Lambourne testified, the users requesting “virtual zones” and “macro” or “preset” groups disclosed the “zone scene” concept. Lambourne Dep. Tr. at 131 (“Q. Did your

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invention address the concerns of these users through adding Zone Scenes? THE WITNESS: Yes. My invention would describe the need described here. Q. Why is that? A. By allowing a user to save zone groupings or linking, as being referred to here.”) (objections omitted). The named and saved groups also meet Sonos’s requirements that for a group to be a “zone scene” that it must be named and saved. The “virtual zones” and “macros” save the groups, as shown in those forum posts, and the users are attributing names to them like “Downstairs.”

(viii) *Limitation 1.7: “(ii) receiving, from the network device over the data network, a second indication that the first zone player has been added to a second zone scene comprising a second predefined grouping of zone players including at least the first zone player and a third zone player that are to be configured for synchronous playback of media when the second zone scene is invoked, wherein the second zone player is different than the third zone player;”*

232. In my opinion, the Sonos System discloses or renders obvious this claim limitation.

233. As one example, Zone Player 3 may be the joinee group coordinator for a standalone group (containing only Zone Player 3). The user may select ZP3 in the Zone Menu, press the “Link Zone” button, and then select adding the “joiner” standalone group with ZP3 as the group coordinator. The result is a group comprising ZP3 + ZP1 with ZP3 as the group coordinator and ZP1 as the second group member. A user may also drop ZP1 from the previously created (see prior limitation) group of ZP2 + ZP1. Dropping ZP1 from this group causes ZP1 to operate in standalone mode. In the Sonos System, however, speakers are often operating in standalone mode because they may play back music individually while still being a part of the Party Mode as discussed above. Indeed, even when a speaker is joined to a group with group playback, other speakers not part of that group are part of the speakers that are a member of the

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Party Mode group, and the members of the group are member of Party Mode as well. Regardless, those speakers are in standalone mode with respect to Party Mode. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

234. [REDACTED]

[REDACTED]

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[REDACTED]

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235. [REDACTED]

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236. [REDACTED]

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237. [REDACTED]

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238. [REDACTED] p

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	(b) (6)	[REDACTED]
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239. _____

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240. As another example, Sonos allows users to wire speakers to the Zone Players in multiple configurations due to the wiring options included with each Zone Player. Accordingly, any Zone Player may be connected to speakers in the same room, different rooms, or even speakers connected to different Zone Players, allowing for freedom for the user to create multi-room and overlapping speaker setups, as Sonos encouraged above.

Your ZonePlayer 80(s) can then be connected to your existing audio system(s) via analog or digital outputs. In my testing, I connected the “base” ZP80—the one near my computer—to both a HeadRoom Desktop Amp for high-quality headphone listening and various “computer” speakers for listening out loud. (The ZP80, like its bigger sibling, doesn’t include a headphone jack.) I connected another ZP80 to a Focal-JMLab iCub amplifier/subwoofer with NHT satellites in my living room.

IA at 198.

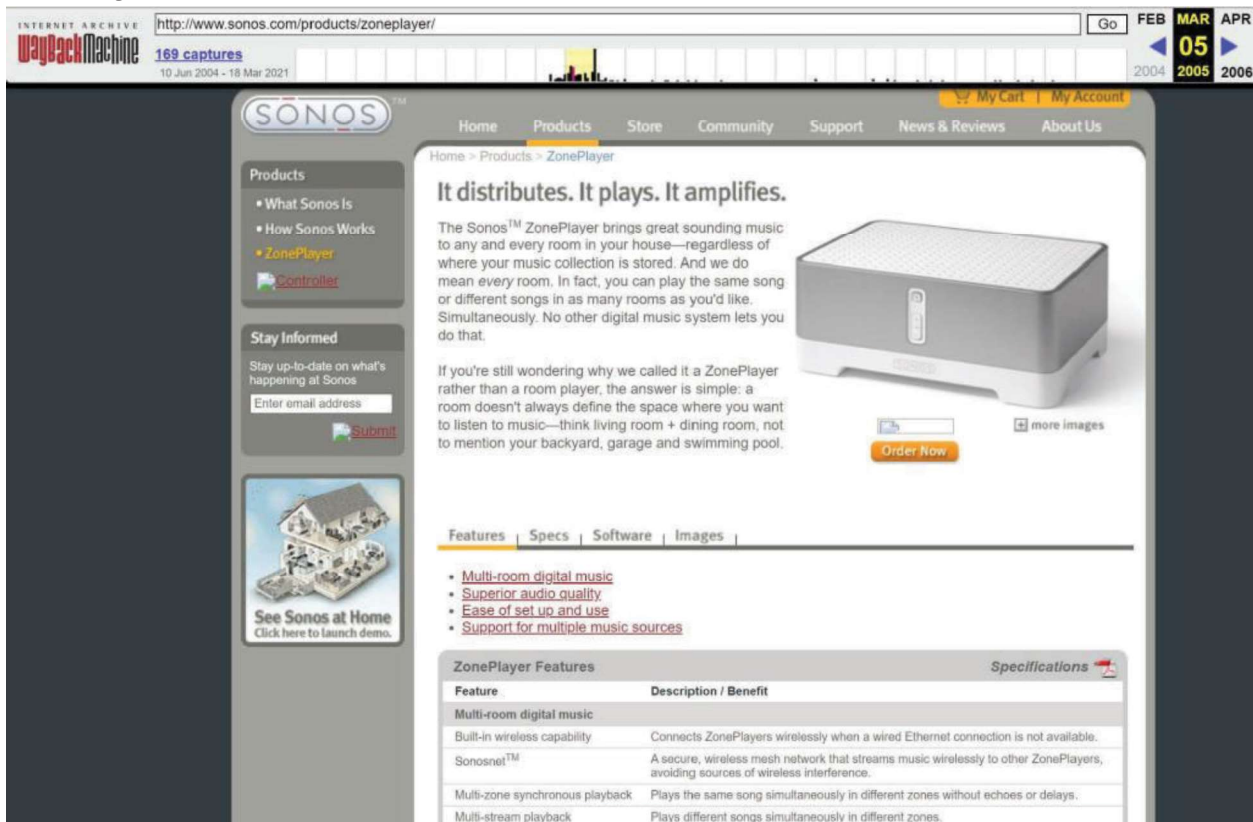
1) Obviousness – POSITA

241. In the alternative, this claim limitation discloses nothing more than overlapping speaker groups, which would have been obvious to a person of skill in the art at the time. Indeed, the Sonos System already disclosed having groups and also having a “Party Mode” / “All Zones” group, which would necessarily encompass any groups already created and therefore disclose overlapping groups. A person of skill in the art would have been motivated to add overlapping groups because Sonos’s own marketing materials touted the benefits of playing any song, in any room, from anywhere, including the ability to “simultaneously play the same song or different songs in as many rooms as you’d like.”

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IA at 123.



IA at 125.

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IA at 135.

242. A person of skill in the art would have recognized that by allowing a user to create speaker groups, those groups may either (1) allow overlapping group membership or (2) not allow overlapping group membership. Given that allowing overlapping group membership may be attractive to certain users because there was a recognized “need for dynamic control of the audio players as a group,” it would have been obvious to select allowing overlapping group membership when implementing speaker groups. ’885 Pat at 1:30-34.

1) Obviousness – Nourse

243. A person of skill in the art would also have been motivated to combine the Sonos System with Nourse, which discloses a plurality of speakers, each of which has “a unique 16-bit address.” Nourse, 3:57-58. “Each of the speakers also can be assigned up to four group identifiers.” *Id.* at 3:58-59. The group identifier “allows specific speakers to be assigned to a group and receive the same signal.” *Id.* at 3:61-63. Thus, any speaker “can be assigned to more than one group.” *Id.* at 4:5. Nourse is analogous to the ’885 patent because it is in the same field of

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endeavor, “controlling or manipulating a plurality of multimedia players in a multi-zone system.” ’885 Patent, 1:30-34. For example, Nourse, like the ’885 patent, explains that it is directed to “a centralized speaker system that allows multiple speakers connected to a central amplifier speaker line to be monitored and controlled from a central location via a master/slave protocol.” Nourse at Abstract. Nourse is also reasonably pertinent to the problem to be solved by the ’885 patent, “dynamic control of the audio players as a group.” For example, Nourse explains that speakers may be “addressed individually or as part of a group” by “receiving unique content specific, respectively, to the individual remote speaker address and group address” (*id.* at 2:35-39) where the group address or identifier “allows specific speakers to be assigned to a group and receive the same signal” and play back audio as a group (*id.* at 3:61-63). Nourse teaches additional means for improving the user experience by allowing a user to add a playback device to multiple groups. Nourse at 3:57-4:5. It would have been desirable to allow a user to have a particular zone player join multiple groups (e.g., the kitchen and patio could be grouped for outside entertainment, and the kitchen and living room could be grouped for inside entertainment). Having a speaker join multiple groups would increase the number of customized combinations a user could configure in their home, as the Sonos System and Webpage recognize as an important feature.

1) Obviousness – Rajapakse (US 8,239,559)

244. A person of skill in the art would have found it obvious to combine Rajapakse with the Sonos System. Rajapakse was cited by many Sonos patents regarding speaker grouping, including patents from the same family as the ’885 patent, indicating that persons of skill in the art recognized that Rajapakse was highly relevant to the claimed features. For example, Mr. Lambourne in prosecuting US 2013/0251174 disclosed Rajapakse as relevant prior art. 2014-04-17 Information Disclosure Statement. Rajapakse was also cited by the following patents—which are closely related to the ’885 patent.

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US20130251174A1	Sonos, Inc.	Controlling and manipulating groupings in a multi-zone media system
US8788080B1	Sonos, Inc.	Multi-channel pairing in a media system
US9226087B2	Sonos, Inc.	Audio output balancing during synchronized playback
US9226073B2	Sonos, Inc.	Audio output balancing during synchronized playback
US9456279B1	Google Inc.	Automatic control and grouping of media playback devices based on user detection
US9671997B2	Sonos, Inc.	Zone grouping
US9729115B2	Sonos, Inc.	Intelligently increasing the sound level of player
US10209948B2	Sonos, Inc.	Device grouping
US10306364B2	Sonos, Inc.	Audio processing adjustments for playback devices based on determined characteristics of audio content
US10331399B2	Apple Inc.	Smart audio playback when connecting to an audio output system
US10356526B2	Razer (Asia-Pacific) Pte. Ltd.	Computers, methods for controlling a computer, and computer-readable media
US10516718B2	Google LLC	Platform for multiple device payout
US11265652B2	Sonos, Inc.	Playback device pairing

245. Rajapakse discloses this claim limitation.

246. For example, Rajapakse discloses dynamic playback among many speakers in groups. Rajapakse at 13:41-45 (“There may be multiple streams of audio being sent to multiple media renderers 203 in multiple zones at the same time. . . As an example, a media renderer may be the front left channel when a movie is being played to a screen that is centered between it and the front right. This would be configured as default movie stream. This same media renderer may be configured also to be the back left channel when playing a default HiFi audio stream, where hi performance front media renderers are positioned elsewhere in the room.”).

247. Rajapakse also discloses synchronized playback in speaker groups. Rajapakse at 11:60-65 (“The rendition of each stream by a media renderer 203 (speaker) needs to be synchronized in time. This is enabled by the distribution server 204 working with the media renderer 203, using a stream protocol specific to the media renderers 203. This protocol includes the methods to time-synchronize rendition of the stream.”).

248. Rajapakse discloses dynamic grouping and transitioning speakers among different

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groups. Rajapakse at 3:65-67 (“If the user and media source 101 move to the dining room that also has a set of destination devices 103 present, it is desirable for music playback from the media source 101 to transition to this new set of destination devices 103 automatically and without interruption.”).

249. Rajapakse discloses that each player/speaker may be a part of multiple groups. Rajapakse at 4:47-54 (“Each media renderer 203 is set up with a variety of properties including lists of acceptable zone identifications, acceptable zone manager identifications, acceptable zone 50 control point identifications, lists of acceptable stream identifications, rendition properties such as volume and role properties.”).

250. Rajapakse discloses having many properties for players within a speaker group and therefore discloses “zone scenes.” Rajapakse at 4:53-67 (“One of these properties, the 'role' of a media renderer 203, can define what stream channel the media renderer 203 will 55 play back. Each audio data stream may include multiple channels, where each channel is defined as front left, center, front right, back left, back center, back right, subwoofer, etc. The media renderer 203 can be configured to accept one of the channels in the stream. If the stream does not contain the channel the media renderer 203 is configured for, it may be configured to play an alternate channel or not play anything. In addition to the channel type roles, a media renderer's role may include other 'roles.' A media renderer's role could be to play only deep base sounds, or to play only high pitch sounds in the media. As another example, a media renderer's role may be to provide special effects, such as echoes or background sounds. As a further example, a media renderer's role may be to play pre-recorded media segments at various points of the media stream. For example, a media renderer 203 may play pre-recorded media segments on initiation by a control point or zone manager, or based on sensing various states or conditions, such as powering up the media renderer, or detecting a sensor condition.”).

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251. Rajapakse discloses overlapping groups or zones, and therefore overlapping speakers within those zones. Rajapakse at 5:61-67 (“A zone is a physical space that a number of media renderers belong to and within which the media renderers are physically located. Typically a zone is a listening space, a space where the audio from all the media renderers in the space can be heard. For example, all media renderers within a single auditorium will be in the same zone. Zones may overlap and may include other zones.”).

252. Rajapakse discloses that speakers may be a member of more than one group. Rajapakse at 6:1-4 (“Each media renderer 203 is assigned to one or more zones. Zones are typically identified with a Zone Identifier (ZID).”).

253. Rajapakse discloses dynamic zone and speaker management. 6:6-19 (“The zone manager 210 dynamically gathers and aggregates information on the media renderers 203 in its vicinity and makes this information available to other services. . . . In addition to gathering media renderer information, the zone manager 210 holds information specific to a zone, manages the media renderers 203 in the zone, and may provide additional services and actions, such as media renderer reservation to other services such as control points 201. . . . The zone control point 209 is an enhanced version of a standard control point 201. The enhancements allow the zone control point 209 to interact with the zone manager 210 to quickly gather information on sets of media renderers 203 in a zone and perform actions on the zone.”).

254. Rajapakse discloses zone management that is dynamic. Rajapakse at 12:51-59 (“Once a zone manager 210 registers a media renderer 203, the zone manager 210 may view and modify the media renderer's setup by interacting with a user directly or via a control point 201. This includes modifying the media renderer's zone list, default stream list, role, and properties such as volume.”).

1) Obviousness – Millington

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255. A person of skill in the art would have been motivated to combine Millington with the Sonos System because Mr. Millington worked on the Sonos System and therefore would have been an obvious choice to look to for guidance about potential modifications to that system. Mr. Millington's patents also described aspects of the Sonos System or aspects related to how those systems practice group synchronization and therefore a POSITA would have looked to Millington to understand the Sonos System. Millington was also assigned to Sonos and was filed in the same timeframe as the Sonos System was released.

256. Millington discloses this claim limitation.

257. Millington discloses standalone speakers and synchronous groups. Millington at 6 ("In the following, the term "synchrony group" will be used to refer to a set of one or more zone players that are to play the same audio program synchronously. Thus, in the above example, zone players 11(1) and 11(2) comprise one synchrony group, zone player 11(3) comprises a second synchrony group, zone players 11(4) and 11(5) comprise a third synchrony group, and zone player 11(6) comprises yet a fourth synchrony group. Thus, while zone players 11(1) and 11(2) are playing the same audio program, they will play the audio program synchronously."); 6 ("Similarly, while zone players 11(4) and 11(5) are playing the same audio program, they will play the audio program synchronously.").

258. Millington discloses using dynamic groups. Millington at 7 ("In the network audio system 10, the synchrony groups are not fixed. Users can enable them to be established and modified dynamically. Continuing with the above example, a user may enable the zone player 11(1) to begin providing playback of the audio program provided thereto by audio information source 14(1)(1), and subsequently enable zone player 11(2) to join the synchrony group. Similarly, a user may enable the zone player 11(5) to begin providing playback of the audio program provided thereto by audio information source 14(5)(2), and subsequently enable zone player 11(4) to join

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that synchrony group. In addition, a user may enable a zone player to leave a synchrony group and possibly join another synchrony group. For example, a user may enable the zone player 11(2) to leave the synchrony group with zone player 11(1), and join the synchrony group with zone player 11(6). As another possibility, the user may enable the zone player 11(1) to leave the synchrony group with zone player 11(2) and join the synchrony group with zone player 11(6). In connection with the last possibility, the zone player 11(1) can continue providing audio information from the audio information source 14(1)(1) to the zone player 11(2) for playback thereby.”); Millington at 41 (“The system is such that synchrony groups are created and destroyed dynamically, and in such a manner as to avoid requiring a dedicated device as the master device.”).

259. Millington discloses overlapping speaker groups. Millington at 17 (“As noted above, there may be multiple synchrony groups in the network audio system 10, and further that, for example, a zone player 11(n) may operate both as a master device 21 or a slave device 22(g) in one synchrony group, and as the audio information channel device 23 providing audio and playback timing information and clock timing information for another synchrony group.”); 19 (“Indeed, it will be appreciated that the zone player that is utilized as the audio information channel device for synchrony group 20(2) may also be a zone player that is utilized as the master device 21(1) or a slave device 22(1)(1),..., 22(K)(1) in the synchrony group 20(1).”).

1) Obviousness – Lindemann

260. A person of skill in the art would have found it obvious to combine Lindemann with the Sonos System. Lindemann was cited by many Sonos patents regarding speaker grouping, including patents from the same family as the '885 Patent, indicating that persons of skill in the art recognized that Lindemann was highly relevant to the claimed features. For example, US 2013/0251174 cited to Lindemann. Lindemann and the Sonos System are both in the same field of endeavor. Lindemann Abstract (“A digital wireless loudspeaker system includes an audio

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transmission device for selecting and transmitting digital audio data, and wireless speakers for receiving the data and broadcasting sound. . . . Status messages are included in the transmission frames to control speaker attributes such as speaker group, enabling or disabling a sub-woofer, and volume of the loudspeaker digitally.”).

261. Lindemann discloses overlapping speaker groups. Lindemann at 0064 (“Many homes and offices have multiple groups of loudspeakers—e.g. a group of loudspeakers in the living room and another group in the kitchen. The Group Selection Switch allows a loudspeaker to be assigned to one of many groups of loudspeakers.”).

1) Obviousness – Squeezebox

262. As Mr. Lambourne testified, he was aware of Squeezebox given its competitive nature with the Sonos System. *Supra*. Others including reviewers recognized Sonos System as a competitor of Squeezebox. *Supra*. As such, a person of skill in the art, just like the inventor of the patent, would have been motivated to look to Squeezebox and combine aspects of the two systems. And as discussed below, Squeezebox discloses this claim element.

(ix) *Limitation 1.8: “after receiving the first and second indications, continuing to operate in the standalone mode until a given one of the first and second zone scenes has been selected for invocation;”*

263. In my opinion, the Sonos System discloses this claim limitation.

264. Sonos argues that this claim limitation is disclosed based on the following arguments made in its Reply summary judgment briefing:

Third, the ’885 Patent discloses that a “zone scene” is a group of “zone players” that is “predefined” and “saved” for future use during a “setup” phase, but is not activated for synchronous playback at that time. *Supra* II.B.i; ’885 Pat., 8:45-51, 10:4-19, 10:36-52, 11:12-19; D.I. 249-11, 1-2, 9-16; Ex. R, ¶55. Rather, the predefined group of “zone players” initially exists in an inactive state, which is what the ’885 Patent explains when distinguishing a “zone scene” from an ad-hoc group that is automatically activated at the time

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it is formed rather than being predefined and saved for future use. *Id.* In this respect, the '885 Patent discloses that, unlike for an ad-hoc group, the act of adding "zone players" to a "zone scene" does not cause those "zone players" to become linked together for synchronous playback at that time. Ex. R, ¶53. This conveys to a POSITA that a "zone player" operating in "standalone mode" prior to being added to each new "zone scene" will continue to operate in "standalone mode" after being added to each new "zone scene." *Id.*

Fourth, the '885 Patent discloses that the subsequent act of "invoking" a "zone scene" is what activates the "zone scene" for synchronous playback by causing the "zone players" in the invoked "zone scene" to become configured to play audio in synchrony in accordance with a given "zone scene." *Supra* II.B.i; '885 Pat., 9:16-20, 10:53-63; Ex. R, ¶56.

265. I have excerpted the portions of the specification that Sonos cites as support for this claim limitation below:³

According to one embodiment, a set of zones can be dynamically linked together using one command. Using what is referred to herein as a theme or a zone scene, zones can be configured in a particular scene (e.g., morning, afternoon, or garden), where a predefined zone grouping and setting of attributes for the grouping are automatically effectuated.

8:45-51.

FIG. 5A shows a user interface 500 to allow a user to form a scene. The panel on the left shows the available zones in a household. The panel on the right shows the zones that have been selected and be grouped as part of this scene. Depending on an exact implementation of a user interface, Add/Remove buttons may be provided to move zones between the panels, or zones may be dragged along between panels. FIG. 5B shows another user interface 520 to allow a user to form a scene. The user interface 520 that may be displayed on a controller or a computing device, lists available zones in a system. The list of zones in the user interface 520 includes ALL the zones in the system, including the zones that are already grouped. A checkbox is provide next to each of the zones so that a user may check in the zones to be associated with the scene.

10:4-19.

³ DI 249-11 is a cover sheet stating that Exhibit 7 was filed under seal. Sealed Exhibit 7, which is DI 248-6, only has four pages and therefore does not match the pincites to pages 1-2 and 9-16 that Sonos provided. Therefore neither of these documents appear to be the material relied upon by Sonos. To the extent Sonos correctly identifies the document it intends to rely upon, I reserve my rights to respond to any such evidence.

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The process 600 is presented in accordance with one embodiment of the present invention and may be implemented in a module to be located in the memory 282 of FIG. 2C.

The process 600 is initiated only when a user decides to proceed with a zone scene at 602. The process 600 then moves to 604 where it allows a user to decide which zone players to be associated with the scene. For example, there are ten players in a household, and the scene is named after “Morning”. The user may be given an interface to select four of the ten players to be associated with the scene. At 606, the scene is saved. The scene may be saved in any one of the members in the scene. In the example of FIG. 1, the scene is saved in one of the zone players and displayed on the controller 142. In operation, a set of data pertaining to the scene includes a plurality of parameters. In one embodiment, the parameters include, but may not be limited to, identifiers (e.g., IP address) of the associated players and a playlist. The parameters may also include volume/tone settings for the associated players in the scene. The user may go back to 602 to configure another scene if desired.

10:36-52

FIG. 7 shows an example user interface for invoking a zone scene. The user interface of FIG. 7 shows a Zone Menu that includes selectable indications of zone scenes.

FIG. 8 shows another example user interface for invoking a zone scene. FIG. 8 shows a Zone Menu that includes a softkey indicating a Scenes menu. Pressing the Scenes softkey will show the Scenes menu where all the available zone scenes are shown as selectable indications.

11:12-19

266. Sonos claims that these citations disclose that because the allegedly disclosed “predefined group of ‘zoneplayers’ initially exists in an inactive state . . . the ’885 Patent discloses that, unlike for an ad-hoc group, the act of adding ‘zone players’ to a ‘zone scene’ does not cause those ‘zone players’ to become linked together for synchronous playback at that time.” And therefore “This conveys to a POSITA that a ‘zone player’ operating in ‘standalone mode’ prior to being added to each new ‘zone scene’ will continue to operate in ‘standalone mode’ after being added to each new ‘zone scene.’” In other words, Sonos argues that having a “zone scene” that is not automatically activated discloses the limitation.

267. In the Sonos System, the “Party Mode” exists at all times because it is a default

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“zone scene” and therefore it exists prior to it being “invoked” as claimed. Under Sonos’s understanding of the claims, therefore, “Party Mode” discloses this claim limitation.

268. Further, the figures that Sonos relies upon to show this claim limitation was disclosed in the ’885 Patent are very similar to the same user interface used in the Sonos System. For example, Sonos relies upon Figure 5A, below.

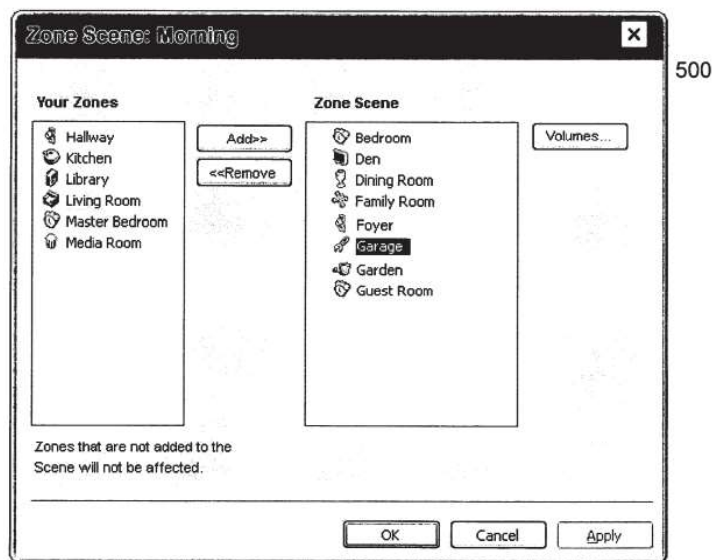


FIG. 5A

269. The user interface of the Sonos System also allows Zones to be grouped together (or ungrouped) in nearly the same manner:

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To add a zone to a zone group

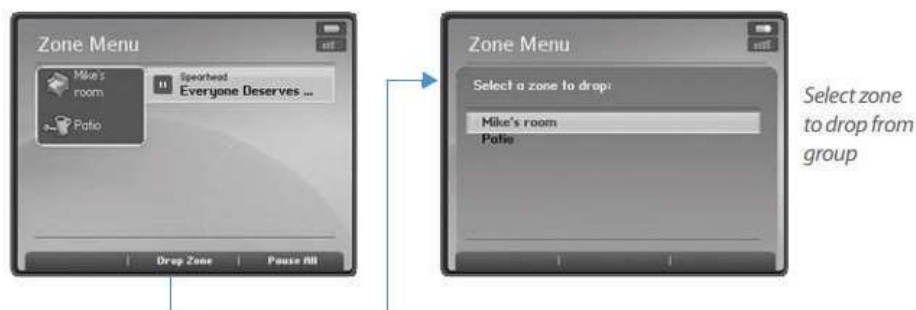
1. Touch the **Zones** button on your Controller.



2. Highlight the zone or zone group you want to add a zone to, and touch **Link Zone**.

To drop a room from your zone group

1. Touch the **Zones** button on your Controller.



2. Use the scroll wheel to highlight the zone group you want to change, and touch **Drop Zone**.
3. Highlight the zone you want to drop from the group, and touch **OK**. The room that's removed from the zone group stops playing music. The other zones in the zone group continue unaffected.

Lambourne Dep. Ex. 1078 at 4-5.

270. Further, as discussed above, Sonos has taken the position that “standalone mode” includes having a zone player not playback any media. *Supra*. In the normal course of using the Sonos System, “any zones you link will automatically drop their current music queue and begin to play the music queue from the highlighted zone.” However, “if you select link zone from a zone where there is no music playing, any zone you link to it will also be silent.” Accordingly, silent

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zones may remain in standalone mode even when added to different groups if the groups that they are added to are silent and depending on the order in which they are added to that group.

To link a zone to a zone group

You can create a zone group first and then select music to play, or you can add a zone to a zone group where music is already playing.



Note: Any zones you link will automatically drop their current music queue and begin to play the music queue from the highlighted zone. You may sometimes want to save your music queue before linking a zone. See "To create a Sonos playlist" on page 3-17.

1. From the **Zones** pane, highlight the zone you want to link another zone or zone group to.
2. Choose one of the following options:
 - Click **Link Zone**.

Or,

- From the **Zones** menu, click **Link Zone**.



3. Select a zone to add to the group, and click **OK**. If you want to join all the zones in your house to this music queue, select **All Zones-Party Mode**. All of your ZonePlayers will then play the same music until you drop the zones from the zone group.



Note: The order in which you add a zone makes a difference. If you select **Link Zone** from a zone where there is no music playing, any zone you link to it will also be silent.

Lambourne Dep. Ex. 1077 at 30.

271. As another example, as discussed in some of the examples above, ZP1 may be in standalone mode when it is dropped from a group. In particular, the ZP1 may be dropped from the second joinee group (second zone scene). Subsequently, the controller may add ZP1 to either the first joinee group (first zone scene) or second joinee group (second zone scene). [REDACTED]

[REDACTED]

[REDACTED]

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A series of horizontal black bars of varying lengths, some with small white rectangular markers at their start or end, arranged in a staggered, descending pattern from top-left to bottom-right. The bars are solid black with thin white outlines. Some bars have small white rectangular markers at their start or end, possibly indicating specific points or segments. The overall arrangement suggests a sequence or a timeline of events, with the bars representing different durations or periods. The bars are arranged in a descending staircase pattern, starting from the top-left and moving towards the bottom-right. The lengths of the bars vary, with some being significantly longer than others. The white markers are small and rectangular, positioned at the beginning or end of the bars. The background is white, providing a high contrast for the black bars. The overall composition is minimalist and abstract, focusing on the relative lengths and positions of the bars.

272.

272. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

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273.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

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[illegible]

1) Obviousness – POSITA

274. In the alternative, it would have been obvious to a person of skill in the art to allow the Zone Players to remain in standalone mode as claimed. Indeed, the inventor wrote that there were only three possibilities for the behavior when a speaker is added to a group, as shown below in an excerpt from the provisional appendices in numbers 1-3.

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1.1.3 What happens to the Music that's already playing when a Zone Scene is started.

If no music is playing in any Zone – then the zones will simply link in a group.

If music is playing in one or more zones there are several possibilities (TBD)

1. The Music Queue in the zone group that was formed by the Zone Scene will be empty. In other words – the music will stop in any room that is part of the Zone Scene. This is the simplest solution, but may lead to frustration.
2. The user gets to choose from which of the 'joining' Queues the new zone group should play. This could be in the form of a dialog:

What should the new Zone Group play?

No Music

Track 1

Track 2

Radio Station A

Note that this method would only be useful (and possible) with simple Zone Scene grouping. With Advanced Zone Scene groupings, this dialog would become much too complicated.

3. In the case where only one of the zones in the new group was playing music, the new group should take the music (and Queue) of that zone.

SONOS-SVG2—00167534 at 167537.

275. However, there are actually four possibilities for actions when a speaker is added to a group, not three, because none of the above are actually claimed, as I describe in Section XI. A person of skill in the art would have found it obvious to choose from one of these possibilities—stop music, choose music, adopt the music of the only playing speaker, and continue playing the “standalone” music—when adding a speaker to a group. These are a limited number of obvious design options.

1) Obviousness – Millington

276. Further, as discussed above, a person of skill in the art would have been motivated to combine the Sonos System with Millington. They are both in the same field of endeavor—control of speaker systems, speaker groups, synchronous playback of speakers, and home audio

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systems—and they both describe the same features and devices (e.g., “zone players”) in the same language. Further, a person of skill in the art looking to the Sonos System would have also reviewed materials authored by one of the engineers, like Mr. Millington, that was working on the Sonos System to learn more about its capabilities.

277. Millington discloses “synchrony groups,” which correspond to the zone groups disclosed in the Sonos System. Millington notes that “[a] user, using the user interface module 13, can enable a zone player 1 l(n) that is currently not a member of a synchrony group to join a synchrony group, *after which it will be enabled to play the audio program that is currently being played by that synchrony group.*” Millington at 7 (emphasis added); *see also id.* at 9 (“Contemporaneously, the zone player 1 l(n) can notify the master device of the synchrony group that it (that is, zone player 1 l(n)) is joining, after which the master device can begin transmission of audio information and timing information to that zone player 1 l(n). The zone player 1 l(n) can thereafter begin playback of the audio program defined by the audio information, in accordance with the timing information so that the zone player 1 l(n) will play the audio program in synchrony with the master device.”); *id.* at 41 (“The system is such that synchrony groups are created and destroyed dynamically, and in such a manner as to avoid requiring a dedicated device as the master device.”). Accordingly, Millington discloses that even when a zone player is added to a zone group (i.e., synchrony group), that it is only *enabled* to play the audio program playing in the synchrony group, but it does not necessarily play that audio immediately. Instead, the zone player must later transition to synchronous playback, as the claims require.

278. Millington further discloses keeping a media player in standalone mode after joining a group, because players disclosed by Millington continue to operate independently of the newly joined group. Millington at 7 (“As another possibility, the user may enable the zone player 1 l(1) to leave the synchrony group with zone player 1 l(2) and join the synchrony group with zone

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player 11(6). In connection with the last possibility, the zone player 11(1) can continue providing audio information from the audio information source 14(1)(1) to the zone player 11(2) for playback thereby.”).

279. Millington discloses that speakers may be enabled to play back music in a group when they join that group, but do not necessarily do so. *Id.* (“A user, using the user interface module 13, can enable a zone player 11(n) that is currently not a member of a synchrony group to join a synchrony group, after which it will be enabled to play the audio program that is currently being played by that synchrony group.”).

1) Obviousness - Rajapakse

280. It would have been obvious to combine Rajapakse with Sonos System for the reasons discussed above. As discussed below, Rajapakse discloses this claim limitation.

281. Rajapakse discloses keeping speakers in a standalone mode. Rajapakse at 14:37-40 (“Also it is possible to have the media renderers in no specific zone, which can be considered as equivalent to the media renderers being in zone 0 or a default zone.”).

282. Rajapakse discloses that after being added to a zone, the media renderer (speaker) may be playing or idle, so it may not be invoked by any zone (i.e., in standalone mode). Rajapakse at 7:52-56 (“The identity information includes the media renderer's identifier, its set of assigned zone identifiers (ZIDs), and its role within each zone, and known default stream identifiers for each zone. The current state information includes its current playing state: playing or idle.”). Sonos described “standalone mode” this way in its summary judgment brief, as discussed above.

283. Rajapakse discloses dynamic grouping and transitioning speakers among groups. Rajapakse at 3:65-4:2 (“If the user and media source 101 move to the dining room that also has a set of destination devices 103 present, it is desirable for music playback from the media source 101 to transition to this new set of destination devices 103 automatically and without

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interruption.”).

284. Rajapakse also discloses that the user may select which zone to invoke from many different zones. Rajapakse at 8:34-40 (“After zone manager discovery 602, the zone control point 209 retrieves zone information from each zone manager 210 and the zone control point 209 then uses this information to select a zone from the available set of zones. This selection may be an auto selection from the available zones (ZIDs) based on some preset criteria, such as signal strength, or based on user selection. . . . This process allows the user and zone control point 209 to get information on the zone, view media available to play on the zone and then make a selection.”).

285. Rajapakse discloses transitioning from one zone to another or transitioning from not playing music to playing music. Rajapakse at 8:67-9:2 (“If a new zone control point 209 requests the zone, the previous zone control point 209 can release the reservation.”).

286. Rajapakse discloses transitioning from one zone manager to another. Rajapakse at 9:35-44 (“If a media renderer 203 is already registered with another zone manager when the registration request comes in, and the registration request passes authentication, before responding, the media renderer 203 will notify 707 its current zone manager of the registration request from the new zone manager and ask for permission to deregister. If the current zone manager does not respond to this deregistration request within a timeout period, the media renderer 203 will assume approval and accept the new registration request from the new zone manager.”).

287. Rajapakse discloses forcing a transition of a media renderer from one zone to another. Rajapakse at 9:57-59 (“The user may, via the zone control point 209, cause the zone manager 210 to send a force registration 703 request to a media renderer.”).

1) Obviousness - Lindemann

288. It would have been obvious to combine Lindemann with Sonos System for the reasons discussed above. As discussed below, Lindemann discloses this claim limitation.

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289. Lindemann discloses selectively activating the speaker based on group membership, before or after that speaker was joined to a group. Lindemann at Cl. 9 (“9. The speaker of claim 2, further comprising means, responsive to a control signal in the status data for assigning the speaker to a speaker group, for selectively activating the speaker based on the speaker group to which the speaker is assigned.”).

1) Obviousness – Squeezebox

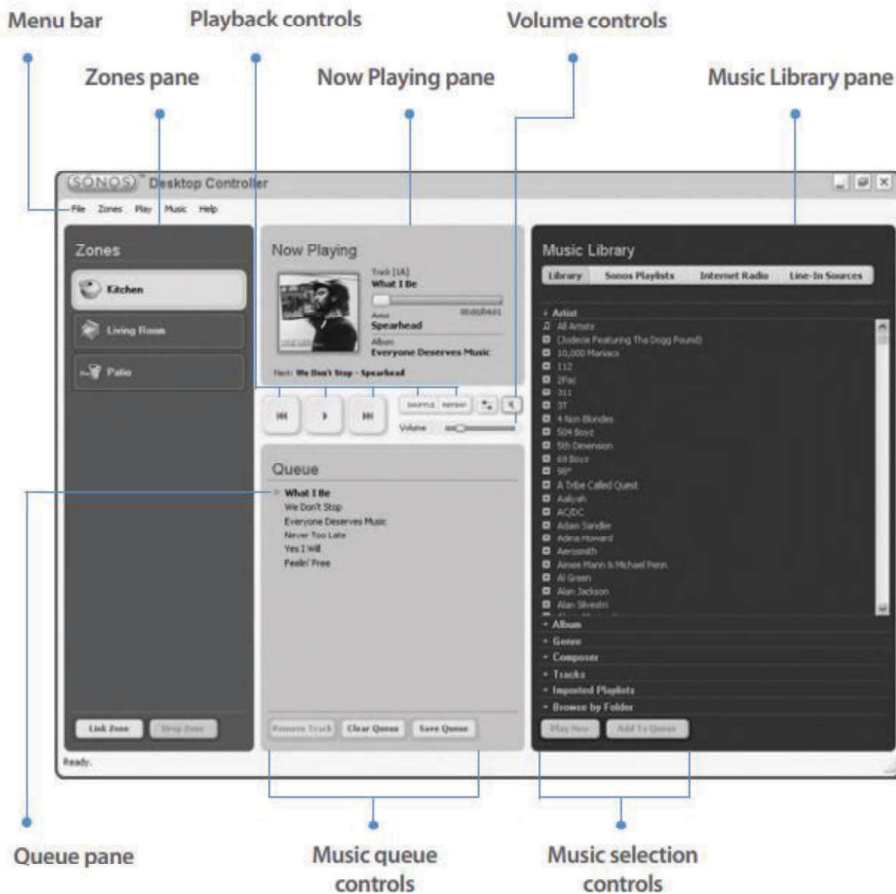
290. For the reasons discussed above, it would have been obvious to combine the Sonos System with Squeezebox. And as discussed below, Squeezebox discloses this claim element.

(x) *Limitation 1.9: “after the given one of the first and second zone scenes has been selected for invocation, receiving, from the network device over the data network, an instruction to operate in accordance with a given one of the first and second zone scenes respectively comprising a given one of the first and second predefined groupings of zone players; and”*

291. In my opinion, the Sonos System discloses this claim limitation.

292. In the Sonos System, a user may select a zone group for playback using the “Zones pane” and the playback controls to cause the Zone Players to operate as a synchronous playback group, as described below in the Sonos System user manual. The user may select the Zone Player or group in the “zones pane” on the lefthand side using the desktop controller (shown below) or the handheld controller CR100. The desktop controller or handheld controller provides an instruction to the Zone Players to operate in accordance with those saved groups (“zone scenes”) to synchronously play back media. The groups include user defined groups as discussed *supra* as well as groups that are provided by the Sonos System, such as “Party Mode,” which may play music synchronously through all the Zone Players in the system.

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You can select an action using the following method(s):

- Click the appropriate action button
- Select an action from the Menu bar
- Highlight a selection and then right-click

Playback Controls

The **Now Playing** pane displays track information for the music you are currently listening to. You can control the music settings for the current selection using the playback controls below:



Play/Pause

Toggles between playing and pausing the current track.



Next (single-click)

Click **Next** to jump to the start of the next track in the queue.



Fast forward (long press)

Click and hold down the **Next** button, or click and drag the progress bar to move forward through the current track. The music playback jumps to the new position when the button is released (while you are seeking, the song continues to play at the normal rate.) When the play indicator reaches the end of the track, play stops.

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Managing Your Zones

The **Zones** pane allows you to view the music currently playing in any zone in your house. You can play a different song in each zone, or you can group zones together to play the same music when you are having a party or anytime you want the same music selection to play in more than one room. Zones can be managed from either the **Zones** pane or the **Zones** menu. From either of these, you can:

- See an alphabetical list of the zones in your house
- Link zones together to form a zone group
- Drop a zone from a zone group

Zone groups

A zone can be grouped together with any other zone(s) to form a zone group. This will cause all the zones in the zone group to play the same music. You can link or drop zones from a zone group while the music is playing. You can also link all the ZonePlayers in your house with one touch by selecting **All Zones-Party Mode**.

To select from your music library

1. From the **Zones** pane, click to highlight the zone you want to play music in.
2. Choose one of the following options:
 - From the **Music Library** pane, click the **Library** tab.

Or,

- From the **Music** menu, click **Music Library**.
3. Use the mouse to move through the list until you reach the choice you want. To play all songs by an artist, on an album, or in a genre, highlight the selection and click **Play Now** to play the music now, or **Add to Queue** to add it to the end of your music queue. Click  to expand the music tree for any selection.

If you've created Sonos playlists (music queues you have saved), you can browse these playlists using the **Sonos Playlists** tab. See "Sonos Playlists" on page 3-17 for more information.

Lambourne Dep. Ex. 1077 at 25-33.

293. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

1) Obviousness – Squeezebox

227

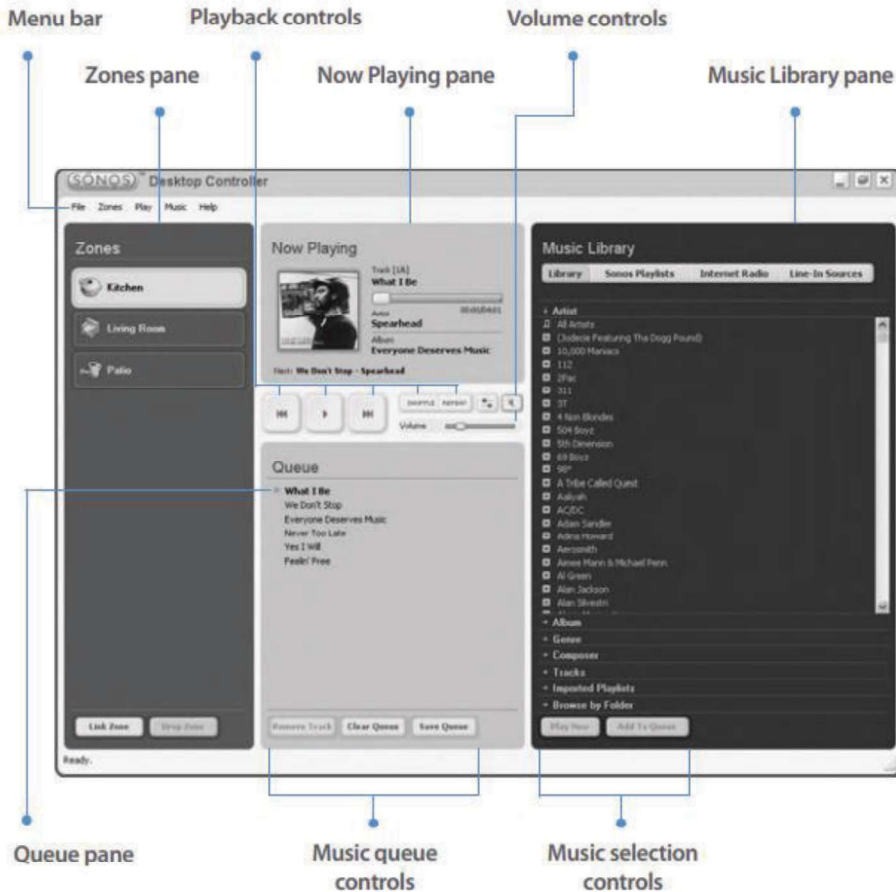
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(xi) *Limitation 1.10: “based on the instruction, transitioning from operating in the standalone mode to operating in accordance with the given one of the first and second predefined groupings of zone players such that the first zone player is configured to coordinate with at least one other zone player in the given one of the first and second predefined groupings of zone players over a data network in order to output media in synchrony with output of media by the at least one other zone player in the given one of the first and second predefined groupings of zone players.”*

296. In my opinion, the Sonos System discloses this claim limitation.

297. As described in the previous claim limitation, a user may select a zone group for playback using the “Zones pane” and the playback controls to cause the Zone Players to operate as a synchronous playback group, as described below in the Sonos System user manual. The user may select the Zone Player or group in the “zones pane” on the left hand side using the desktop controller (shown below) or the handheld controller CR100. The desktop controller or handheld controller provides an instruction to the Zone Players to operate in accordance with those saved groups (“zone scenes”) to synchronously play back media. The groups include user defined groups as discussed *supra* as well as groups that are provided by the Sonos System, such as “Party Mode,” which may play music synchronously through all the Zone Players in the system. The Zone Players will then coordinate with each other to attempt to provide synchronous playback of media.

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You can select an action using the following method(s):

- Click the appropriate action button
- Select an action from the Menu bar
- Highlight a selection and then right-click

Playback Controls

The **Now Playing** pane displays track information for the music you are currently listening to. You can control the music settings for the current selection using the playback controls below:



Play/Pause

Toggles between playing and pausing the current track.



Next (single-click)

Click **Next** to jump to the start of the next track in the queue.



Fast forward (long press)

Click and hold down the **Next** button, or click and drag the progress bar to move forward through the current track. The music playback jumps to the new position when the button is released (while you are seeking, the song continues to play at the normal rate.) When the play indicator reaches the end of the track, play stops.

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Managing Your Zones

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- See an alphabetical list of the zones in your house
- Link zones together to form a zone group
- Drop a zone from a zone group

Zone groups

A zone can be grouped together with any other zone(s) to form a zone group. This will cause all the zones in the zone group to play the same music. You can link or drop zones from a zone group while the music is playing. You can also link all the ZonePlayers in your house with one touch by selecting **All Zones-Party Mode**.

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1. From the **Zones** pane, click to highlight the zone you want to play music in.
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 - From the **Music Library** pane, click the **Library** tab.

Or,

- From the **Music** menu, click **Music Library**.
3. Use the mouse to move through the list until you reach the choice you want. To play all songs by an artist, on an album, or in a genre, highlight the selection and click **Play Now** to play the music now, or **Add to Queue** to add it to the end of your music queue. Click  to expand the music tree for any selection.

If you've created Sonos playlists (music queues you have saved), you can browse these playlists using the **Sonos Playlists** tab. See "Sonos Playlists" on page 3-17 for more information.

Lambourne Dep. Ex. 1077 at 25-33.

298. 













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[illegible]

300. For the reasons discussed above, it would have been obvious to combine the Sonos System with Squeezebox. And as discussed below, Squeezebox discloses this claim element.

B. Claim 1 Is Invalid Based On Squeezebox in view of General knowledge of a POSITA, the Sonos System, the Sonos Forums, the Bose Lifestyle, or Millington.

301. Squeezebox was publicly available, on sale, offered for sale, and described in printed publications both before the critical date (i.e., prior to September 12, 2005), before the alleged conception date (i.e., prior to December 21, 2005), and prior to the patent filing date on September 12, 2006. The features offered in that system were substantially the same during each of those time frames, as discussed below.

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302. The capabilities and features of Squeezebox are apparent from source code available to the public, the products themselves, technical documentation that Logitech/Slim Devices has made available, public documentation regarding that system, professional and customer reviews, and other sources discussed below.

303. In my opinion, Claim 1 is anticipated and/or rendered obvious based on the Squeezebox in view of the general knowledge of a POSITA, and the references as described below. Below, I analyze each limitation of Claim 1 and demonstrate why that claim is invalid.

304. I discuss certain source code functionality of SlimServer and Squeezebox devices below. Here I offer background for those opinions.

305. Regarding the SlimServer configuration, the SlimServer program is written in Perl, supplemented with additional platform-specific binary programs such as a Windows GUI wrapper. As discussed further in the code analysis below, information about synchrony groups is persistently stored in the SlimServer preferences file. In the default configuration, the SlimServer preferences file is located at `/etc/slimserver.conf`. This location can be changed by editing the configuration file `/etc/sysconfig/slimserver`.

306. Regarding the SlimServer execution, the main SlimServer program is `slimserver.pl`, which is located at the root of the SlimServer folder—`/usr/local/slimserver` as installed by the Linux RPM and at the root of the "perlscripts" distribution (e.g., as extracted from `SlimServer_v5.3.1_perlscripts.ZIP`). Under RPM-based Linux distributions (e.g., RedHat, Fedora, or Mandrake), the SlimServer server is automatically started at boot. Alternatively, as documented by the `Installation.txt` file, the server can be invoked by directly running the `slimserver.pl` program with command-line arguments.

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```

If you aren't installing the RPM, you can start the server from a command line
with the following command:

./slimserver.pl --daemon

This will start up the server and run itself in the background.

Visit the URL that's printed out with your web browser to configure your
SlimServer and see the complete documentation.

-----

Usage: ./slimserver.pl [--audiadir <dir>] [--diag] [--daemon] [--stdio] [--logfile <logfilepath>]
      [--user <username>]
      [--group <groupname>]
      [--httpport <portnumber>] [--httpaddr <listenip>]]
      [--cliport <portnumber>] [--cliaddr <listenip>]]
      [--priority <priority>]
      [--prefsfile <prefsfilepath>] [--pidfile <pidfilepath>]]
      [--d_various]

```

307. I have run the slimserver.pl program under the Perl debugger to dynamically test the Squeezebox.

308. Regarding server management, the server is primarily managed by a Web interface accessed at the URL **Error! Hyperlink reference not valid.**, where <SLIMSERVER_ADDR> is a placeholder for the IP address of the SlimServer. The server can also be managed by a command-line interface (CLI), accessed by default at TCP/IP port 9090. The CLI interface is documented as being designed for integration with Crestron and other automation systems. The available CLI commands are documented at:

HTML/EN/html/docs/crestronCLI.html — on disk

http://<SLIMSERVER_ADDR>:9000/html/docs/crestronCLI.html — via Web UI

The SlimServer provides a command-line interface to the Slim Devices players via standard in and out and a TCP/IP port. After starting the server, commands may be sent by connecting to a specific TCP/IP port or directly from the command line. Each command is terminated by a carriage return. The server will reply echoing the request. If the request included a "?" in a parameter to request a value from the server, the "?" will be replaced by the requested value in the reply. By default, the SlimServer will listen for connections on TCP/IP port 9090. This format is designed for ease of integration into Crestron and other automation systems.

To use the command line interface interactively, use the telnet command from your system's command prompt: *telnet localhost 9090* and when it connects, you can start typing commands.

309. For example, the SqueezeboxWiki "Remote control plugins" page shows a number of Crestron Modules to SlimServer/Squeezeboxes, including support to sync/unsync players. *See,*

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e.g., https://wiki.slimdevices.com/index.php/Remote_control_plugins.html.

310. In the source code analysis that follows, SlimServer or SlimServers generally correspond to the claimed “network device” and the Squeezebox or Softsqueeze generally corresponds to the claimed “zone players.” However, Squeezebox also discloses the alternative of allowing the “network device” to comprise an automation controller (e.g., Crestron) and one or more SlimServers that are managed by the automation controller.

311. Regarding SoftSqueeze, this is a virtualized controller for Squeezebox. The SlimServer installation bundles a version of the SoftSqueeze player. SlimServer v5.3.1 bundles SoftSqueeze 1.5, while SlimServer v6.2.1 bundles SoftSqueeze 2.2. The web UI allows SoftSqueeze to run using Java Web Start or as a Java applet: **Error! Hyperlink reference not valid..**



312. The SoftSqueeze program is located on disk at:

HTML/EN/html/softsqueeze/SoftSqueeze.jar

313. For the dynamic analysis, SoftSqueeze may be started by changing to the SoftSqueeze folder and invoking the JAR file directly:

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```
cd HTML/EN/html/softsqueeze  
java -jar SoftSqueeze.jar
```

314. Regarding message protocol, SlimServer supports two message protocols for communication with players: (1) SLIMP3 client protocol — used with older SLIMP3 players; and (2) SlimProto — used with Squeezebox and SoftSqueeze. My analysis focuses on the SlimProto protocol, which is used both with Squeezebox devices and with SoftSqueeze. For reference, SLIMP3 is documented at: https://wiki.slimdevices.com/index.php/SLIMP3_client_protocol.html

315. SlimProtocol is a message protocol used for players to communicate with a SlimServer server.

316. The online Squeezebox Wiki includes a description of a version of the SlimProto protocol, later than the version supported in either v5.3.1 or v6.3.1.

<https://wiki.slimdevices.com/index.php/SlimProtoTCPProtocol.html>. The SlimServer distribution also contains a web page describing the SlimProto protocol used by that distribution:

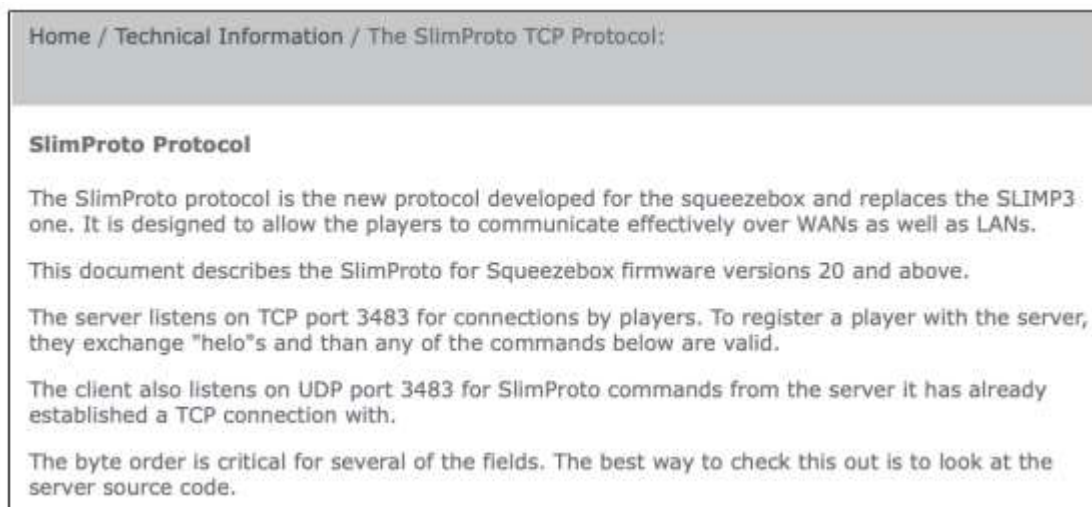
HTML/EN/html/docs/slimproto.html — on disk;

Error! Hyperlink reference not valid.

Home / Technical Information / The SlimProto TCP Protocol — navigation path via the SlimServer Web UI

317. I have taken screenshots in this Report from the SlimServer web interface. Per the SlimServer documentation, SlimProto is designed to allow the players to communicate over both WANs and LANs. The server listens on TCP port 3483 for connections by players. The client also listens on UDP port 3483 for SlimProto commands from the server (when there is an already established TCP connection).

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318. I analyzed the SlimServer source code both statically (code review) and dynamically (by running the code under the Perl debugger).

Release	Location	Notes
5.3.1	https://downloads.slimdevices.com/SlimServer_v5.3.1/	The analyzed RPM and source code archives were originally downloaded from the Internet Archive, but the downloads were later determined to be binary-identical to the archives from downloads.slimdevices.com. ZIP metadata shows source code dated 04-Oct-01.
6.2.1	https://downloads.slimdevices.com/SlimServer_v6.2.1/	ZIP metadata shows source code dated 05-Nov-14.

319. For dynamic analysis, the following Linux RPMs are installed into separate VMware virtual machines.

slimserver-5.3.1-1.noarch.rpm

slimserver-6.2.1-1.noarch.rpm

320. The source code for static analysis is taken from the archives.

SlimServer_v5.3.1_perlscripts.ZIP

SlimServer_v6.2.1_perlscripts.ZIP

321. Unless otherwise indicated, all code citations are relative to the root of the extracted "perlscripts" distribution. For example, SlimServer_v5.3.1_perlscripts.ZIP extracts all code to a

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folder hierarchy rooted at a "SlimServer_v5.3.1" folder. A code citation to the v5.3.1 version of "slimserver.pl" refers to the "slimserver.pl" file in the SlimServer_v5.3.1 folder. The metadata of these files as well as the contents shows that they are prior art and available more than one year before the filing date of the patent.

322. SlimServer and each player run in separate VMware virtual machines (VMs). All VMs run the Fedora Core 4 Linux operating system, which was released on June 13, 2005.

https://en.wikipedia.org/wiki/Fedora_Linux_release_history#Fedora_Core_4.
<https://archives.fedoraproject.org/pub/archive/fedora/linux/core/4/i386/iso/> — Installer ISOs, dated 2005-06-07

323. The player VMs additionally have Java 5.0u4 installed (2005-06-23 release date) using the Linux RPM in self-extracting file.

<https://www.java.com/releases/> — shows release dates
<https://www.oracle.com/java/technologies/java-archive-javase5-downloads.html> — download
[jdk-1_5_0_04-linux-i586-rpm.bin](https://www.oracle.com/java/technologies/java-archive-javase5-downloads.html)

324. As such, all of the virtual machine testing demonstrated the functionality of and was the prior art system. All of the virtual machine testing confirmed (and was confirmed by) testing of physical prior art devices, which are likewise prior art and demonstrate the functionality of the prior art system.

(i) *Limitation 1 (preamble): "A first zone player comprising:"*

325. To the extent the preamble is limiting, Squeezebox discloses the preamble in my opinion. For example, the Squeezebox website (formerly "slimdevices.com" and later owned by Logitech), was publicly available no later than February 2005. The Squeezebox or Softsqueeze player corresponds to the claimed Zone Player and it provides the ability to stream digital music from a controller over a Wi-Fi or ethernet network. It can plug into any home theater stereo or speakers with digital and analog outputs, and allows a user to synchronize multiple players for whole house audio.

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INTERNET ARCHIVE Wayback Machine http://www.slimdevices.com/pi_overview.html 558 captures 6 Feb 2003 - 6 Mar 2022

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Free your music!

Squeezebox is revolutionary. It streams your music from your computer to your digital stereo over your wireless or ethernet network—without any loss of sound quality. You now have lightning-fast access to any song in your digital music collection, anywhere in your home.

The Squeezebox player is incredibly easy to set up and use. It takes just a few minutes to install: simply load SlimServer, our powerful and free Open Source [software](#), onto your computer and connect the player to your network. Squeezebox automatically configures itself and is ready to use.

Squeezebox is a complete and elegant solution that takes advantage of the power and capacity of your existing computer. As a result, Squeezebox places no limit to the size of your music library.

Squeezebox's user-friendly interface allows you to browse quickly through your whole music collection via [remote control](#) or web browser. Its large, built-in fluorescent display is bright and easy to read. Thanks to its small form factor, you can place Squeezebox in your stereo cabinet, on a shelf or on your bedside table.

Digital and analog RCA outputs connect Squeezebox to your home theater, stereo receiver, or amplified speakers. And when you install multiple players, they can play independently or in sync for whole-house audio.

Now starting at \$199! 30-day satisfaction guarantee.

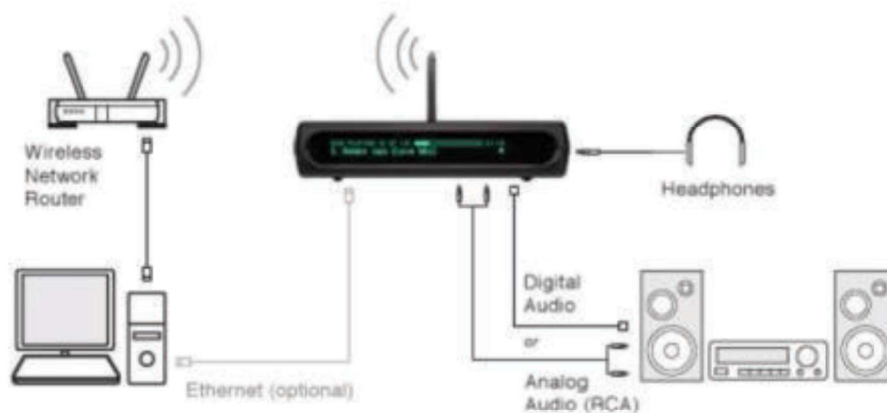
BUY now

Key features:

- Stream digital music from your computer or over the Internet
- Listen to MP3, WMA, AAC, Apple Lossless, Ogg Vorbis, FLAC or uncompressed audio (WAV and AIFF)
- Browse and stream SHOUTcast Internet radio
- Place anywhere—low profile, built-in display, no TV required
- Connect to 802.11 wireless or ethernet network
- Plug into any home theater stereo or speakers with digital and analog outputs
- Synchronize multiple players for whole house audio
- Browse and search using custom infrared remote or any web browser
- Extra features—built-in alarm clock, music selection by Album Art, plugins, web interface skins

IA at 61.

326. As shown below, Squeezebox connects the controller (for example a computer) and a speaker system.



Id.

327. Further, Squeezebox receives digital music from a controller or computer and can send both digital optical and analog outputs to the speakers, therefore including certain audio

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processing.

INTERNET ARCHIVE http://www.slimdevices.com/pi_moreinfo.html Go JAN FEB MAR
Wayback Machine 88 captures 7 Jun 2004 - 5 Nov 2008 2004 2005 2006

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Confused by all the new network MP3 players?

Here are a few things to consider when purchasing any wireless network music player:

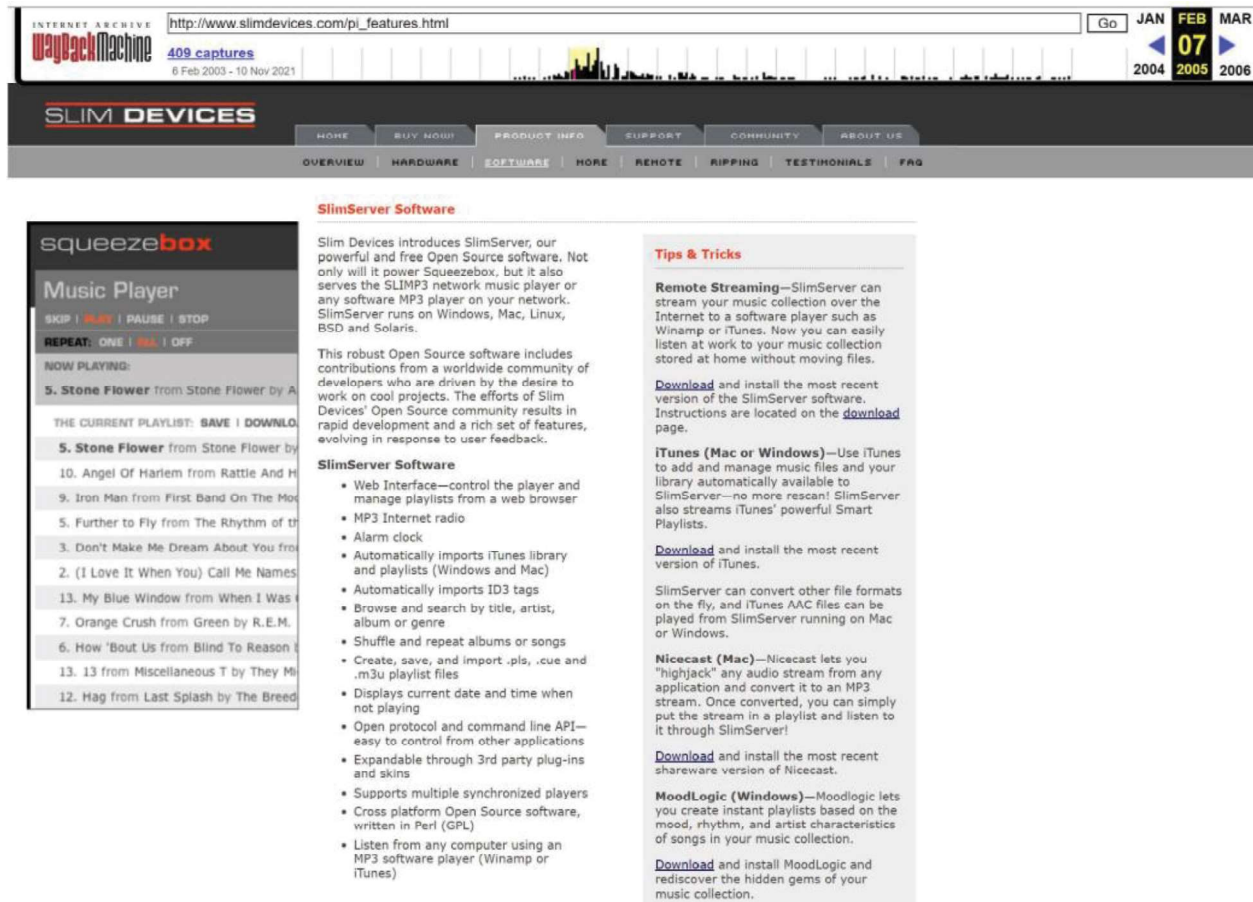
- **Wireless Signal Strength**—The quality of the wireless network connection depends on the position and height of the antenna. Internal antennas significantly reduce the distance that the player can be placed away from the wireless router and decrease the reliability of the connection the server. Squeezebox uses an external antenna and can be upgraded to use higher-gain third-party antennas.
- **Audio Formats**—Why settle for low-quality and low-bitrate MP3s? As storage becomes less expensive, uncompressed and new lossless formats like FLAC and Apple Lossless become more attractive. Squeezebox supports a broad range of compressed, uncompressed and lossless formats and the SlimServer architecture allows the addition of additional formats through free server software upgrades.
- **Whole-house audio**—A key benefit of a digital music collection is having ubiquitous access to the music in every room and at any time. Is the system able to stream to multiple players? Can multiple players play in sync and independently? Is the player small enough to be placed in every room, and is the design smart enough not to require a TV for setup and normal operation? Squeezebox is designed from the ground up for a whole-house experience with multi-player sync and remote control and its elegant low-profile design fits in every room.
- **Audio Outputs**—Audio outputs, in large part, determine the quality of the listening experience. All players offer analog outputs. A few players also offer digital optical connections. Squeezebox includes both digital optical and coax outputs to connect to any device with digital inputs, as well as analog RCA and headphone connectors.
- **Startup-time**—Music listeners expect their music to be available immediately without waiting through a long PC-like start-up cycle. Squeezebox installs fast, starts-up in a snap, and responds to requests instantly.
- **Remote**—What happens if you lose or break the "specialty" remote that came with the player. Can you replace it with a universal remote or do you have to buy an expensive replacement? Squeezebox understands a broad range of IR signals from third-party remotes as well as IR signals from its custom designed remote. Additionally, you can control Squeezebox from your wireless PocketPC or laptop.
- **Music Accessibility**—Some players require that you pay extra to listen to music over the Internet. There is nothing inherently wrong with these services but does the player also offer free alternatives like SHOUTcast streaming directory? Squeezebox supports open streaming formats like Icecast and SHOUTcast.
- **Obsolescence**—A risk of modern technology is that companies, large and small, who make new devices, may not continue to sell or support them in the long run. Squeezebox is built around an active and creative open source community and won't ever become obsolete because the users control the software and are motivated to keep up to date.
- **Server Interface**—Controlling the player through the display is necessary but is it sufficient? The SlimServer software that powers Squeezebox can be controlled from any web browser and can be downloaded for free to evaluate and use.

If you care about these issues, consider trading up to Squeezebox—the network music player that was designed to meet the real needs of music listeners, from start to finish.

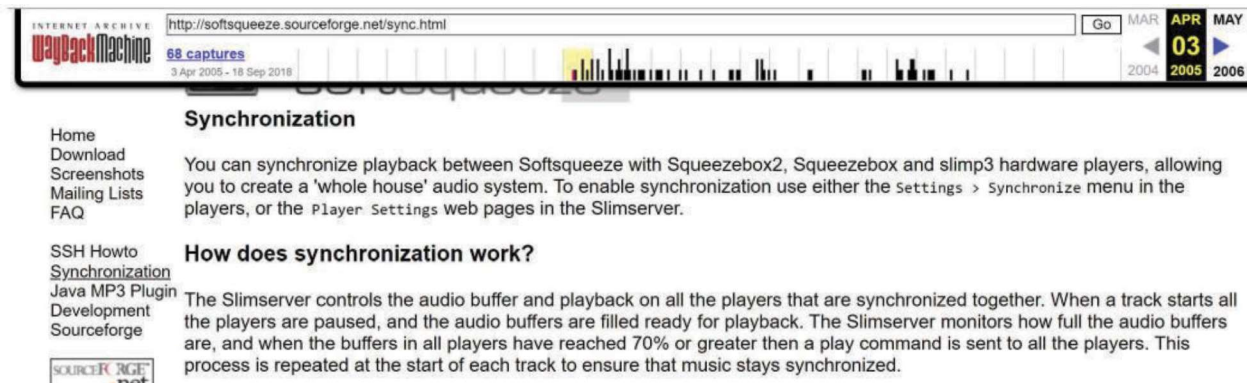
IA at 63.

328. Squeezebox also includes network hardware allowing the a user to control, through digital commands, its actions including synchronization, identification, music playback, and more.

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IA at 68.



IA at 87.

329. I understand that Sonos does not dispute that Squeezebox discloses this claim limitation. Specifically, I understand that Google served an interrogatory requesting Sonos's contentions for why Claim 1 of the '885 patent is not invalid over Squeezebox. I have reviewed Sonos's response ("Validity Contentions") as it relates to the Sonos System and Sonos does not

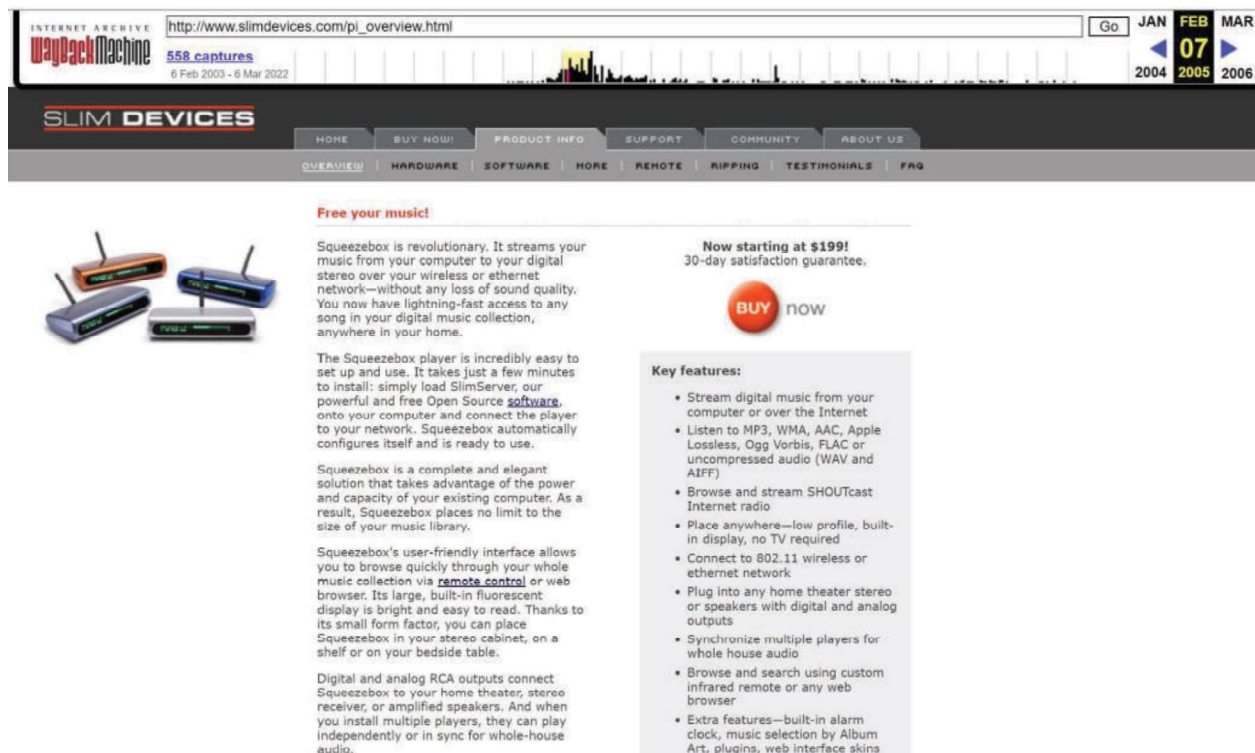
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dispute this claim limitation. *See* Validity Contentions (Attachment A to Sonos's Supp. Rsp. To Google's First Set of Rgs) at 106-107.

(ii) *Limitation 1.1: "a network interface that is configured to communicatively couple the first zone player to at least one data network;"*

330. In my opinion, Squeezebox discloses this claim limitation.

331. For example, Squeezebox or Softsqueeze discloses a network interface including both Wi-Fi and ethernet capabilities that couples the Squeezebox or Softsqueeze to a data network existing at least between the Squeezebox or Softsqueeze and the controller.



IA at 61.

332. As shown below, the Squeezebox or Softsqueeze connects the controller (for example a computer) and a speaker system.

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Id.

333. Squeezebox or Softsqueeze is also described throughout its documentation as a digital system, and therefore if network interface requires a digital data communication system as Sonos argued, the prior art meets Sonos’s proposed construction as well as Google’s. *Supra.*

334. I understand that Sonos does not dispute that Squeezebox discloses this claim limitation. Specifically, I understand that Google served an interrogatory requesting Sonos’s contentions for why Claim 1 of the ’885 patent is not invalid over Squeezebox. I have reviewed Sonos’s response (“Validity Contentions”) as it relates to Squeezebox and Sonos does not dispute this claim limitation. *See* Validity Contentions (Attachment A to Sonos’s Supp. Rsp. To Google’s First Set of Rogs) at 85-86.

(iii) *Limitation 1.2: “one or more processors;”*

335. In my opinion, Squeezebox discloses this claim limitation.

336. For example, Squeezebox or Softsqueeze may receive digital media and send that media in analog form (or digital form) to a set of speakers. Squeezebox also supports numerous digital media file types requiring decoding and processing.

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What compression formats does Squeezebox2 use?

Squeezebox2 supports MPEG 1/2, layers 2/3, for both VBR and fixed data rates up to 320Kbps (the maximum for MP3). Additionally, Squeezebox2 can play FLAC and Apple lossless encoded audio as well as AIFF and WAV uncompressed audio. This means that the original data from the CD is being played digitally, without any compression or loss of sound quality. The SlimServer software can automatically convert many formats on the fly for playback, including WMA, AAC and Ogg Vorbis.

Does Squeezebox2 support MP3Pro?

Squeezebox2 can play back MP3Pro files using the backwards compatibility feature of MP3Pro. Unfortunately, the audio quality in this mode has significantly reduced quality. We recommend encoding your music using standard MP3 format.

Does Squeezebox2 support AAC?

Yes. Unprotected AAC files (.m4a) that are created by iTunes can be played on Squeezebox2. Squeezebox2's hardware decoder supports MP3 and uncompressed formats for decoding. Under Mac OS X and Windows, SlimServer can uncompress AAC files and send the raw audio to the Squeezebox2 on-the-fly.

For use on some wireless networks where there is not enough bandwidth to stream uncompressed audio, [please refer to this FAQ entry](#).

Please note that music purchased from the iTunes Music Store ("Protected AAC" (.m4p) files) is encrypted and cannot be played back with Squeezebox2 until Apple provides the necessary hooks to enable this. In the meantime, it is possible to burn your iTunes Music Store songs to CD and re-rip them as unprotected .m4a files.

Does Squeezebox2 support AAC on Linux systems?

AAC files can be played from SlimServer on Linux using a program called [FAAD2](#). To get this working with SlimServer you must do the following:

1. Download the [FAAD2 source code](#), compile it, and install it. (Note: It has been advised to use their latest CVS due to some bugs)
2. Download and install the [latest nightly build of SlimServer](#).
3. Edit your convert.conf file to use FAAD2 instead of mov123:
Comment the lines "mov aif * *" and " [mov123] \$FILES"
Add two lines beneath the commented lines reading: "mov wav squeezebox *" then
" [faad] -w -f 2 \$FILES"
4. Restart SlimServer

Does Squeezebox support Windows Media or Real Player formats?

Squeezebox2 does support WMA CBR, WMA VBR, and WMA Lossless encoded files (but not DRM protected files) when SlimServer is running on Windows. WMA Internet Radio streams are now supported as well. We hope to add support for streamed Real formats in the near future.

Does Squeezebox2 support Ogg Vorbis?

Yes. SlimServer will automatically convert Ogg files to raw PCM on the fly for playback. On Windows, Mac OS X, and Linux, the Ogg Vorbis decoder is included in SlimServer.

IA at 77.

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337. The Squeezebox is also controlled remotely using a remote control or a computer, requiring processing of commands through the on board processor. The Squeezebox also includes processors to coordinate with wireless routers and utilize security protocols such as WEP.

I'm having trouble connecting my Squeezebox2 to a wireless network with WEP enabled.

Double check that the WEP key that you have entered is correct.

If you have an Apple Airport Basestation, you may need to use Apple Airport Admin to obtain your WEP key in the hex format that the Squeezebox2 expects, it's available under the Base Station menu item Equivalent Network Password.

Also, make sure that your access point is configured to use Shared-Key Authentication, not Open-System Authentication.

IA at 82.

338. The Squeezebox processor also facilitates upgrades of Squeezebox firmware.

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I'm having trouble upgrading the firmware on Squeezebox2. Do you have any hints?

If Squeezebox2 is connected to the SlimServer software, you can press and hold the BRIGHTNESS button on the remote for 5 seconds to start the upgrade process.

Original Squeezebox Note:

If the firmware upgrade failed and the display reads "Ready to update this Squeezebox2" and indicates the IP address for the player, then you can open up this URL: <http://localhost:9000/firmware.html>. This page will have a place for you to enter the IP address displayed on Squeezebox. Click Submit to begin the upgrade process.

If the firmware on Squeezebox is corrupted, it may be reset to the IP address "192.168.1.69". If this happens AND the IP address of the computer running the SlimServer software does not begin with 192.168.1, you may need to change the network settings temporarily on the SlimServer computer to an IP address that does, such as 192.168.1.65, in order to perform the firmware update.

I'm having trouble upgrading the firmware on my SLIMP3 Player. Do you have any hints?

Try following these steps:

1. Plug the SLIMP3 device and the computer with the updater into the same hub or switch. (Do not attempt to upgrade your firmware over a wireless network.) Power the hub or switch off and then back on.
2. Remove the power connector from the back of the SLIMP3 device.
3. Stop the SlimServer software.
4. Run a browser and check that the SlimServer software has REALLY stopped.
5. Point the remote at the right side of the SLIMP3, hold down a numeric key, and reconnect the power plug to the SLIMP3. You should see the SLIMP3 display its MAC address. If not then unplug the DC power connector from the device, wait 30 seconds and try this operation again. The SLIMP3 device MUST be displaying its MAC address before you can update the firmware. Write down the MAC address that the SLIMP3 is showing.
6. Start the updater application:
 - o On Windows, the SLIMP3 Updater is in Program Files\SlimServer\firmware.
 - o Mac users can find the SLIMP3 Updater application in the Utilities folder of the SlimServer installer disk image.
 - o On Linux, the firmware updater is `/usr/local/bin/slimserver/slimp3/update_firmware.pl`.
7. You will be prompted to enter the SLIMP3 MAC address in the form 00:04:20:xx:xx:xx - enter the exact same MAC address that the slimp3 displayed in (5) at the updater prompt.
8. The updater will then ask for an IP address so enter the IP address that you have assigned to the SLIMP3 device or, if you have a DHCP server, then enter an address in the DHCP pool.
9. The updater may ask if you want to use "Kiosk" - you answer with "y" or "N". Use "N" if you are having problems getting the SLIMP3 running - use the Kiosk mode once everything is working.
10. The updater will immediately start trying to update the SLIMP3 device at this point-this will take about 30 seconds.

IA at 84.

339. As discussed further below, I describe how Squeezebox receives digital indications regarding group assignment, synchronization, and other issues. This further confirms my opinions that Squeezebox discloses this claim element because the Squeezebox necessarily processes this information to operate responsively.